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THE MONTANA DROUGHT RESPONSE PLAN

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THE MONTANA DROUGHT RESPONSE PLAN

1995

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LIST OF ACRONYMS

BIA..... Bureau of Indian Affairs
BLM ..... Bureau of Land Management
DAC ..... Montana Drought Advisory Committee
DAR ..... Damage Assessment Report
DNRC..... Montana Department of Natural Resources and Conservation
DFWP..... Montana Department of Fish, Wildlife, and Parks
DES ..... Montana Department of Disaster and Emergency Services
DEQ ..... Montana Department of Environmental Quality
FAC..... Food and Agricultural Committee
CD ..... Conservation District
CFSA ..... Consolidated Farm Service Agency
CRP..... Conservation Reserve Program
EBB ..... Montana Electronic Bulletin Board
ITRR ..... Montana Institute for Tourism and Recreation Research
MPDES ..... Montana Pollutant Discharge Elimination System
MPC ..... Montana Power Company
MCA..... Montana Codes Annotated
LDAC ..... Local Drought Advisory Committee
NPPC ..... Northwest Power Planning Council
NPS..... National Park Service
NRCS ..... Natural Resource Conservation Service
NWS..... National Weather Service
NRIS ..... Montana Natural Resources Information System
PDSI ..... Palmer Drought Severity Index
PSA..... Public service announcement
SBA..... Small Business Administration
SWSI..... Surface Water Supply Index
USDA..... U.S. Department of Agriculture
USFS ..... U.S. Forest Service
USFWS ..... U.S. Fish and Wildlife Service
USGS..... U.S. Geological Survey
WET..... Water Education for Teachers

EXECUTIVE SUMMARY

This plan was written for use by the Montana Drought Advisory Committee in fulfilling its statutory mandate to take measures appropriate for the mitigaion of drought impacts to the people and natural resources of Montana. Experience with past droughts has shown that the most effective approach to accomplish this goal is to coordinate mitigative response actions between state, federal, and local government, and citizen groups in a timely manner. Accordingly, the Montana Drought Response Plan is additionally intended for use by representatives of these entities in addressing problems associated with drought. Appendix G is written specifically for use at the local level with the objective of coordinating responses to drought between government and citizens. The following paragraphs briefly describe the sections of the plan.

INTRODUCTION

The introduction describes the purpose of the Montana Drought Response Plan which emphasizes anticipating, preventing, and mitigating drought impacts. A working definition of "drought" is specified. The guiding philosophy of the Montana drought statute focuses on a proactive, local approach to drought mitigation.

BACKGROUND

This section briefly chronicles the history of drought planning in Montana. It addresses the dry periods that Montana frequently experiences. The state has recorded drought conditions in seven of the last ten years (1984-1994). Recent dry years prompted development of the Montana State Water Plan Section: Drought Management, which is summarized in the background section. In addition, an overview of the state's climatic and topographical characteristics which range from 6 inches of annual precipitation in the southcentral prairies to 120 inches in the northwest mountains is provided.

STRUCTURE AND FUNCTION

This section identifies the membership and responsibilities of the Drought Advisory Committee (DAC) and local drought advisory committees (LDACs). The DAC is responsible for coordinating drought mitigation activities in Montana. Although policy is directed and formulated by state government, LDACs play a pivotal role in drought response since mitigation strategies are most effectively developed and implemented at the local level. The data support subsection lists the names of federal and state agencies which provide information and technical assistance and indicates their respective areas of expertise.

DROUGHT MONITORING

The monitoring and reporting functions provide the DAC and local entities with the information necessary to assess current conditions and to plan appropriate response strategies. This information is given to the local media to inform Montanans about water supplies and moisture conditions. The two primary drought indices used are: The Surface Water Supply Index (SWSI) and the Palmer Drought Severity Index (PDSI). The SWSI projects the surface water supply for the coming month by factoring together mountain precipitation, reservoir storage, and soil moisture. The PDSI is a drought indicator based on measured precipitation, estimated evapotranspiration, and prevailing climatic characteristics. Other factors are examined by the DAC in conjunction with the SWSI and PDSI including the time of year, the prospect of economic or natural resource damage, and deviation from historic norms.

DROUGHT ASSESSMENT

The DAC's member state agencies use the available monitoring data to project the likelihood and possible severity of drought impacts. A "risk assessment" approach generates the most successful drought mitigation strategy. Risk assessment involves the examination of projected worst case impacts to each economic and natural resource sector. The plan describes impact assessment for the following ten economic and natural resource categories: dryland farming, livestock operations, irrigation water supplies, municipal and domestic water systems, fish and wildlife, wildfire, public lands, energy production, tourism, recreation, and secondary commerce.

DROUGHT RESPONSE

The most important function of the Montana Drought Plan is to identify and implement appropriate actions in response to expected or worsening conditions. This section describes the triggering mechanisms for state and county responses. The SWSI and the PDSI form the basis of the "triggering mechanism. " The triggering mechanism initiates a two-tiered response system which designates either a drought "alert," or a "severe" level of drought. For each level, the plan recommends various actions for state and county jurisdictions. A drought alert status activates increased monitoring, media announcements, and planning activities. A severe level drought initiates implementation of planned water conservation and drought mitigation and enforcement measures.

STATE, FEDERAL, AND LOCAL RESPONSE ACTIONS

This section builds upon the responses recommended for state and county governments with more detailed and comprehensive actions related to the respective responsibilities and missions of each jurisdiction. It is organized by agency and by "ongoing" or long-term actions, and "drought" or short-term actions. The actions are further divided into an "alert" or moderate level, and "severe" level to correspond with the plan's two-tiered response strategy.

APPENDICES

Appendix A lists the drought-related responsibilities of each agency represented on the DAC consistent with their respective statutory mandates. The lists are referred to as "Annexes" and must be updated following each year to ensure that newly-developed and successful response strategies are preserved in the plan. Appendix B provides a copy of the Montana Water Plan Section: Drought Management. Appendix C identifies stream permits and laws pertaining to activities most often pursued during drought conditions. Appendix D contains DNRC's policy for resolution of water use conflicts and enforcement procedure. Appendix E provides a flow chart and brief narrative of the USDA Natural Disaster Determination Process and Appendix F, a copy of the drought statute from the Montana Codes. Appendix G is an operations manual for local drought management. Appendix H is a copy of a DNRC Water Supply and Moisture Condition Report. This report is the monthly summary of data used by the DAC in monitoring the state's water supply and moisture conditions.

I. INTRODUCTION

PURPOSE OF THE STATE DROUGHT PLAN

The purpose of this plan is to provide Montana with the framework for an effective and systematic response to the impacts of drought on its people and resources. To this end, the plan prescribes long-term measures to anticipate and prevent drought impacts, and short-term measures intended to mitigate drought impacts. The Montana Drought Plan also:

1) identifies the local, state, and federal agencies and private sector entities involved with state drought management, and defines their responsibilities;

2) defines a process to be followed: monitoring, reporting, assessment, and response, and;

3) identifies a number of long-term and short-term activities that can be implemented to prevent and mitigate drought impacts.

DEFINING DROUGHT

For purposes of this plan, drought is an extended period of below normal precipitation which causes damage to crops and other ground cover; diminishes natural stream flow; depletes soil and subsoil moisture; and because of these effects, causes social, environmental, and economic impacts to Montana. Identifying the point at which drought begins and ends is difficult because physical water supply and moisture conditions translate into different consequences for natural resources and various economic activities.

GUIDING PHILOSOPHY

In the past, the state addressed drought as a temporary emergency. Actions were taken in response to impacts, in a reactionary fashion. The most important lesson learned in recent years was that the best time to reduce the impacts of drought is before they occur. It was not until quite recently that western water planners were able to develop plans that advocated a proactive drought management approach. The Montana drought statute was framed with this approach in mind.

Drought conditions present a variety of problems for water users. In addition to diminished water supplies, legal and practical obstacles hinder timely changes in water allocation during drought. These obstacles often preclude solutions that call for the redistribution of water supplies to places where there is a water deficit. Drought exposes difficulties in the enforcement of water rights, particularly in river basins that have yet to be adjudicated. Furthermore, there is a lack of incentives that encourage water conservation. Given these circumstances, the best approach the state can adopt is to warn water users of impending problems and encourage them to implement conservation measures in advance of drought.

"Proactive" Emphasis

Planning holds great promise for reducing the impacts of drought, which occurs with greater warning and frequency than other kinds of disasters. This plan is based on the idea that with foresight, commitment, technology, and today's knowledge, more can be done to reduce the effects of drought. For example, improvements in drought forecasting methods can enable water users to plan future water use accordingly and mitigate drought impacts in advance of deteriorating water supply and moisture conditions.

The ability to forecast a drought in the short-term is not as good as we would like, but it is improving. From experience we know that some situations present a high likelihood of drought in the near future. For instance, if western Montana has a dry fall resulting in low soil moisture, followed by a low snowfall winter, it is reasonable to expect summer streamflow will be below normal.

Local Emphasis

Montana is too large and its climate too diverse for state government to coordinate all drought management activities. Concerns west of the Continental Divide may not be a problem east of the divide. Even if these two regions of the state have similar drought problems, their responses are likely to be different. The state's role in drought management is to implement a drought policy that provides coordination and technical support for local efforts in a timely fashion.

Much responsibility for drought mitigation rests with the individual, followed by local cooperative action, and state and federal assistance. Although drought often impacts the entire state economy, drought impacts are most significant at the local level where most knowledge and experience to deal with these impacts is found. The most effective responses are planned and implemented by local people with the assistance of government.

Long-term and short-term activities

Preparation for drought should be an ongoing activity to effectively mitigate the impacts of drought when it occurs. Therefore, this plan is organized to address two specific types of activities: 1) short-term, or immediate activities to address a specific imminent impact of drought, and 2) long-term, or ongoing activities that address the certainty that drought will occur sometime in the future.

II. BACKGROUND

The following section provides a brief history of drought in Montana and the circumstances and events leading up to the adoption of the legislation that established the state drought advisory committee.

HISTORY OF DROUGHT PLANNING IN MONTANA

The drought of the 1930's was exacerbated by poor farming practices, low market prices and a depressed economy. Impacts on Montana and across much of the Great Plains were severe. A variety of adjustments ensued: improved farmland management, the establishment of insurance programs, liberalization of credit, and diversification of the regional economy. As a result, impacts caused by the drought of the 1950's were much less severe than those of the 1930's, even though the conditions were similar to those of the dust bowl era of the 1930's. Still, state government's role in mitigating drought impacts was relatively minor.

From 1976 through the present, Montana has endured a period largely characterized by years of below average precipitation, punctuated by the extremely dry years of 1977,1987-88, 1992, and 1994. Montana's first state drought plan was published in 1985 and revised in 1988. These plans were useful primarily for coordinating emergency responses to drought and providing lists of people in state government to contact for help with specific drought-related problems. The plan provided "triggering mechanisms" or thresholds, that were supposed to lead to specific actions by state agencies, but when those thresholds were exceeded, the prescribed response actions were rarely implemented in a timely or effective manner.

The responsibility for the failure of drought plans to achieve identified goals lies less with the plans than with decision-makers who lacked the resolve to implement elements of the plans. Much of this has to do with the psychology of drought management. While it is known that drought will occur again, measures that would lessen our vulnerability to drought in the long and short-term are often overlooked or dismissed. Similarly, while in the midst of a drought, it is certain that someday rains will return and the state will have survived drought once again. This attitude causes people to delay doing the sometimes difficult things that could lessen detrimental impacts of drought in the short-term.

MONTANA STATE WATER PLAN

Dissatisfied with the state's response to the 1985, 1986, and 1988 droughts, the public requested that drought management be addressed by the state water plan process. A steering committee of broad representation made several recommendations to improve state drought management based on the policy statement of the plan section:

It is the policy of the state of Montana to support proactive drought management at the local level to protect the natural resources, economic base, and lifestyles of Montana citizens. This policy requires programs for drought monitoring, assessment, preparedness, mitigation, and assistance.

The state must consider the needs of all water users during drought, including dryland and irrigated agriculture; municipal and rural water suppliers; energy producers; mining and mineral processing; forest products, tourism, recreationists, and recreation-based businesses; and individual water users. Incentives should be provided for all water users to act to prevent or reduce the effects of drought. State technical and financial assistance should be provided to water users in a consistent and predictable manner. Water users should consider the risks posed by drought when making major management decisions and should know what to expect from government if drought occurs.

The steering committee offered numerous recommendations concerning the following issues:

1) Drought Monitoring and Early Warning
2) Impact Assessment
3) Coordination of Governmental Actions
4) Triggering Mechanisms
5) Assistance Programs
6) Funding for Drought Management Programs
7) Research and Educational Programs
8) Drought Mitigation Strategies

The recommendations of the drought steering committee are listed, by issue, in the Appendix of this plan.

One of the most important recommendations of the steering committee was to create a permanent drought advisory committee. House Bill 537, passed by the legislature in 1991, established the Montana Drought Advisory Committee and defined its responsibilities (See Appendix).

MONTANA'S CLIMATIC DIVERSITY

State actions to mitigate drought impacts vary due to Montana's diverse topography and precipitation regimes. Annual precipitation ranges from 6 inches in the southcentral prairies to 120 inches in the northwest mountains. The mountainous regions of the state receive 55 to 80 percent of annual precipitation between October and April. Most of this precipitation is snow that is stored as snowpack until spring runoff. Records indicate that in years when snowpacks are below normal by March 1st, and soil moisture levels are low, streamflows most likely will be low in coming months.

In contrast, the eastern two-thirds of the state, which is primarily characterized by prairie topography, receives 55 to 65 percent of its annual precipitation between April and August. The prairie dryland farming regions must receive spring and summer rains to avert the impacts of drought. Drought mitigation management for this region consists primarily of conservation farming practices, use of drought-resistant grain varieties, and participation in programs that preclude land from production such as the Conservation Reserve Program (CRP).

Drought impacts related to surface water shortages can often be mitigated by changes in water management practices. Adjustments of water management during drought can be effective in mountainous regions of the state that are dependent on mountain snowpack runoff for irrigation. This approach will hold true for central and eastern regions of the state that depend on irrigation water from rivers and reservoirs fed by snowmelt from nearby and distant mountain ranges. Reliable water supply forecasts for irrigation and instream flows can be made early for runoff-dependent regions of the state in contrast to dryland farming regions, which depend on timely precipitation to provide soil moisture for crop growth.

III. STRUCTURE AND FUNCTION

The following section presents the structure and function of the organizations dealing exclusively with drought-related issues at the state and local level. It also includes a table listing the state and federal agencies that support the DAC with data used for forecasting and assessing drought conditions.

MONTANA DROUGHT ADVISORY COMMITTEE

Section 2-15-3308 MCA (1991) established the Montana Drought Advisory Committee (DAC) and delegated staff duties to the Department of Natural Resources and Conservation (DNRC). Subsection (2) states:

> "The drought advisory committee is chaired by a representative of the governor and consists of representatives of the departments of natural resources and conservation; agriculture; commerce; fish, wildlife, and parks; military affairs; health and environmental sciences; state lands; and livestock. The governor's representative must be appointed by the governor and the representative of each department must be appointed by the head of that department. Additional non-voting members who represent federal and local government agencies and public and private interests may also be appointed by the governor." Subsection (3) sets forth the responsibilities of the committee. *The committee shall:*
>
> *(a) with the approval of the governor, develop and implement a state drought plan;*
> *(b) review and report drought monitoring information to the public;*
> *(c) coordinate timely drought impact assessments;*
> *(d) identify areas of the state with a high probability of drought and target reporting and assistance efforts to those areas;*
> *(e) upon request, assist in organizing local drought advisory committees for the areas identified under subsection (3)(d);*
> *(f) request state agency staff to provide technical assistance to local drought advisory committees; and*
> *(g) promote ideas and activities for groups and individuals to consider that may reduce drought vulnerability.*

The statute calls for meetings of the DAC in February and October to assess drought conditions, identifies DNRC as the agency responsible for providing staff support, and requires a status report describing the potential for drought in the coming year to the governor by March 15 of each year. Section 2-15-3308 MCA in full can be found in Appendix F.

Committee Meeting Procedure

Statute requires that Drought Advisory Committee (DAC) meetings are held, ... "at a minimum, on or around the 15th day of the months of October and February of each year to assess moisture conditions and, as appropriate, begin preparations for drought mitigation (Sec. 2-15-3308 MCA 1991)." A meeting in February provides the DAC with an opportunity to review initial projections regarding spring and summer surface water supplies for irrigated agriculture, instream uses, and reservoir storage. Projections are possible by assessing mountain snowpack, soil moisture, carryover reservoir storage, and weather forecasts. An October meeting provides an opportunity to report season end conditions and to summarize the state's response over the preceding months.

Additional DAC meetings are held monthly, or as needed to correspond with the release of federal and state agency status reports. If conditions or circumstances warrant, the chairperson may call a special meeting of the DAC to address specific issues. The chairperson may elect not to hold meetings other than those required by statute, if water supply and soil moisture conditions are near average or above. A water supply meeting of the agencies that monitor conditions may be called in lieu of a monthly meeting of the full committee.

The DAC may hold meetings in March and/or April to report changes in mountain snowpack since February, and to provide an updated projection of summer surface water supplies. March and April are important months for monitoring and forecasting future water conditions. Forecasts of spring and summer water supplies for mountainous river basins can change dramatically between February and April. Normally, mountain snowpack has reached its seasonal peak by mid-April in most of the state. The NRCS releases a *Montana Basin Outlook Report* on April 1, projecting streamflow probabilities for the 15 major river basins of the state based on snowpack.

An April DAC meeting can assist resource managers, water resource-based businesses, agricultural producers, and others in making informed decisions regarding water management activities for the coming season. Initial plans for reservoir operations, irrigation scheduling, and hydropower generation are formulated at this time. An April meeting provides the public and technical committee members with an opportunity to interpret water supply projections and management plans.

DNRC is responsible for providing the chairperson with current information so informed decisions can be made, such scheduling a DAC meeting. Meetings should be held if the drought indices indicate moderate drought or, if an **"Alert"** status exists for more than one area of the state.

Most DAC meetings should be held in Helena at a location that is accessible to the members of the committee and the general public, including the handicapped. The meeting room should be large enough to accommodate the foreseeable attendance. Regular meetings require 2 to 3 hours for reporting and discussion, but may vary in length.

A portion of each DAC meeting is used to report on drought conditions. Each state or federal member of the DAC reports on its respective area of responsibility and expertise. In the event an agency representative cannot attend, the chair should be notified and arrangements made for a substitute. If this is not possible, DNRC can deliver the report to the DAC on behalf of that agency. Supporting documents should be forwarded to DNRC for distribution at the meeting.

The meeting agenda is prepared by DNRC with approval of the chairperson. DNRC ensures that there are enough copies of the agenda for all attendees. Copies of all documents distributed at the meeting shall be made available to anyone requesting them.

Committee Reporting Procedure

Each agency member should present a 10 to 15 minute report; exclusive of questions and answers. The order of reporting by agencies that report water supply and moisture conditions is as follows:

	Reporting Agency	Subject
1)	NWS	Temperature and precipitation, forecasts
2)	NRCS	Mountain snowpack, precipitation
3)	USGS	Streamflow
4)	Reclamation	Reservoir levels (federal)
5)	DNRC	Reservoir levels (state) Fire conditions
6)	USFS	Fire conditions

Following water supply and moisture condition reports state member agencies present assessment reports. Next, responses are explored during a period set aside for general discussion. The chairperson conducts the discussion period and entertains motions from voting members that require a vote. Questions for agencies should be directed through the chairperson. Recommendations concerning assessment or response actions should be addressed by the full committee during this period.

Members of the general public may address the committee during the discussion period, upon recognition by the chairperson. The meeting is not adjourned until those guests wishing to address the committee have had an opportunity to do so. When the chairperson is satisfied that the committee's business has been concluded, the meeting is adjourned.

LOCAL DROUGHT ADVISORY COMMITTEES (LDACs)

The drought statute emphasizes local organization and response to drought and requires that the state, upon request, provide assistance to local governments for drought mitigation. First, the state will identify areas of the state with a high probability of drought and target reporting and assistance efforts to those areas. Next, the state will suggest organizing local drought advisory committees for those areas. The statute further requires that by March 15, the state report the potential for drought to the governor and identify the areas of the state for which the creation of LDACs is advisable.

Structure

An LDAC should include participants from a wide variety of backgrounds and professions. Participants with experience in drought response and from businesses directly affected by drought can be particularly helpful. Topics for LDACs to consider include domestic and municipal water supply, fire suppression, agricultural water use, limitations on sewage discharge, and impacts to fish and wildlife, recreation, tourism, and energy use.

LDACs serve as a focal point for the exchange of information between the DAC and counties. LDACs are encouraged to submit regular reports of local conditions and impacts to the DAC. This can be done by mail, telephone, FAX, or by sending a representative to DAC meetings. An LDAC can request state or federal assistance through the DAC chairperson or staff. A local drought operations manual is included in Appendix G to assist in organizing local drought management efforts.

Function

Generally, LDACs Function much the same as the state DAC. Primary activities of LDACs include monitoring, reporting, assessment, and response. LDACs begin to meet as early as mid-winter to begin discussing local conditions and review soil moisture and snowpack data collected by state and federal agencies. All water supply data used by the DAC is available upon request by LDACs to assist in local planning efforts. Most LDACs begin to meet in response to a recommendation from the governor's office. The governor's recommendation is triggered by the "**Alert**" status, which comes in advance of drought, in time to prepare for its impacts.

LDACs prepare for drought during spring by identifying beforehand, actions to take in response to worsening conditions. LDACs are advised to seek local expertise with knowledge of local resources at the first indications of drought. Planning should be initiated early enough for an LDAC to reach consensus on responses appropriate for a given level of drought. Planning for situations in advance increases the likelihood that a response will be timely in minimizing economic or resource loss. Additionally, LDACs should engage in long-term activities to be prepared for drought. DAC staff will

arrange support for water conservation education, preparation of water use ordinances and public service announcements, and technical support for municipal water supply issues.

DATA SUPPORT PROVIDED TO DAC

A number of federal and state agencies collect meteorologic and hydrologic data for use in assessing and forecasting water supply and soil moisture conditions. These data are reported to the DAC agencies for use in making impact assessments. The agencies and subject areas are listed below:

Reporting Agency	Data Reported
1) NWS	Soil moisture, precipitation, forecasts
2) NRCS	Mountain snowpack, precipitation
3) USGS	Streamflow
4) Reclamation	Reservoir levels (federal)
5) DNRC	Reservoir levels (state) Fire conditions
6) MSU, NWS	Soil moisture conditions
7) Montana Agricultural Statistics	Weather, soil moisture, crop information

In addition to reporting current conditions, monitoring agencies compare current and projected conditions with historic averages so committee members can place current conditions in context with past years. After April 1, the chairperson requests drought impact assessments by state agencies. DNRC will invite experts to address the DAC on special topics to promote awareness and to assist the DAC in making decisions.

FUNDING

No special compensation is provided to state member agency representatives serving on the DAC or to representatives of any other federal agency or private organization for expenses incurred as a result of involvement with the DAC. All costs are borne by the member agency or organization. Requests for additional emergency funding are directed through the governor's office.

Staff is responsible for procuring additional funding for state drought management as needed or as it becomes available. Staff applies for grant funding from federal sources, such as the Reclamation States Drought Emergency Relief Act of 1991, administered by the U.S. Bureau of Reclamation.

IV. DROUGHT MONITORING

Taking a proactive approach to drought management requires continuous monitoring of factors indicating the onset and extent of drought conditions. This approach serves to lessen the element of surprise and allows time for planning and implementing drought mitigation strategies. Monitoring activities are increased as conditions warrant and continue as long as drought conditions persist. Monitoring provides continuous feedback to decision-makers and helps determine the short term planning of the assessment and response functions.

MONITORING CONDITIONS

The DAC is not active from November through January. However, agencies continue to monitor conditions and provide DAC staff with data over the winter months. Particular emphasis is placed on monitoring mountain snowpacks during January, February, March, and April. Snowpack data from 15 major river basins is updated daily by the NRCS in its SNOTEL report. DNRC staff monitors Snotel data regularly to detect trends in snowpack conditions.

Two indices are important in monitoring moisture conditions. The Palmer Drought Severity Index (PDSI) measures the severity of a precipitation deficit within a given region using soil moisture data, and the Surface Water Supply Index (SWSI) projects streamflow within individual basins. Both indices are important for assessing current and future water supply conditions. They describe different, but coexistent hydrological regimes. They comprise the foundation of the "triggering mechanism" for activation of the plan's drought responses.

Palmer Drought Severity Index

The Palmer Drought Severity Index (PDSI) is an index of soil moisture based on measured precipitation, estimated evapotranspiration, and climatic characteristics. It is calculated from observed temperature and precipitation values and is most useful for evaluating conditions for prairie dryland farming and livestock grazing. The PDSI is a surrogate for actual soil moisture measurement, which is too costly to gather on the scale necessary for drought management purposes. Several agencies maintain soil moisture measuring stations and these data are used to corroborate PDSI figures at critical times.

The Montana State Climate Center calculates PDSI figures monthly for about 150 locations statewide. The values are site-specific and provide a current evaluation of soil moisture conditions. The monitoring system is operative from February 1 to September 1. The state climate center forwards the data to Natural Resources Information Systems (NRIS) located at the state library in Helena around the 10th day of the month. NRIS uses a Geographic Information System (GIS) to generate a PDSI map (See Appendix H). Completed maps are forwarded to DNRC and included in its monthly Soil Moisture and Water Supply Report. The PDSI ranges from -4 (extremely dry) to +4 (extremely wet) with a value of 0 indicating average soil moisture. The following table indicates PDSI ranges and descriptions:

Palmer Drought Severity Index (PDSI) scale

PSDI	Designation
>+4.0	Extremely wet
+3.0 to +4.0	Very wet
+2.0 to +3.0	Moderately wet
+1.0 to +2.0	Slightly wet
+0.5 to +1.0	Incipiently moist
-0.5 to +0.5	Near average
-0.5 to -1.0	Incipient drought
-1.0 to -2.0	Mild drought
-2.0 to -3.0	Moderate drought
- 3.0 to -4.0	Severe drought
<-4.0	Extreme drought

The National Weather Service (NWS) also generates PDSI figures. Figures are calculated weekly for each of seven geographic regions of the state. The NWS regional PDSI figures are useful in summarizing soil moisture conditions by region and for comparing PDSI figures generated by the state climate center. NWS reports its PDSI regional figures at DAC meetings. Changes in soil moisture levels can be monitored more frequently using NWS PDSIs than with monthly state climate center PDSIs since NWS PDSIs are updated weekly.

Surface Water Supply Index

The NRCS calculates a Surface Water Supply Index (SWSI) for individual Montana river basins based on snowpack, mountain precipitation, soil moisture, and reservoir storage. The SWSI projects streamflows for snowmelt-driven hydrologic regimes. It is particularly useful in forecasting water availability for irrigated agriculture, fisheries, and other uses of runoff water.

The calculation of the index relies on statistics generated from historic data which are collected from individual watersheds. The SWSI can be used to forecast water supplies since the water content of snowpack is stored until runoff. During runoff much of the water is stored in reservoirs and released gradually over the growing season. At the beginning of each month, NRIS receives data from the NRCS and uses them to generate SWSI map on a monthly basis February through August for DNRC's Water Supply and Moisture Condition Report (See Appendix H).

Surface Water Supply Index (SWSI)

SWSI	Designation
+3.0 to +4.0	Extremely wet
+2.0 to +3.0	Moderately wet
+1.0 to +2.0	Slightly wet
-1.0 to +1.0	Near average
-1.0 to -2.0	Slightly dry
-2.0 to -3.0	Moderately dry
-3.0 to -4.0	Extremely dry

Other Indicators of Drought

It should be noted that SWSI and PDSI values are, on the average, 2 weeks old when reported at DAC meetings. The delay is related to the time needed to prepare the water supply report. This limitation may result in the omission of data indicating current trends from consideration by the DAC. For this reason, the monitoring agencies usually provide updated information for the DAC meeting. This is especially important when the DAC is considering assigning an Alert or Severe drought status to a region of the state. Other factors to consider and the source(s) of such data are:

1) Precipitation since prior month's end; (NWS)

2) Snow water equivalent of remaining snowpacks; (NRCS)

3) Current and projected reservoir storage levels; (Reclamation, DNRC)

4) Current streamflows; (USGS)

5) Current soil moisture levels; (NWS)

6) Short-range weather forecasts (NWS)

7) Fuel moisture levels of forests; (DNRC, USFS)

8) Rate and nature of change in any of the foregoing factors;

9) Reports of livestock producers hauling water; (Agriculture, Livestock) and

10) Field observations and reports indicating drought.

REPORTING CONDITIONS

Because of the state's vast size and variety of climatic conditions, drought conditions can occur in one or two areas, while the remainder of the state is experiencing normal conditions. Likewise, conditions can quickly improve in part of the state and not elsewhere. Reporting improvements in conditions is as important as reporting deterioration of conditions.

Water supply and moisture conditions are reported in a variety ways. The USGS, NRCS, Bureau of Reclamation, NWS, and Corps of Engineers periodically issue reports concerning water supply conditions. State agencies that issue water supply and moisture condition reports include DNRC and DFWP. DNRC compiles the *Water Supply and Moisture Condition Report* from federal and state agency data (Appendix H).

Water Supply and Moisture Condition Report

DNRC compiles the *Water Supply and Moisture Condition Report* on a monthly basis, from February to October, unless above average moisture conditions are prevalent. At a minimum, the report is generated for the February and October meetings to assist the DAC in assessing the potential for drought in the coming season.

The report narratives summarize the state's weather for the previous month, the NWS 30- and 90-day forecasts, snowpack or mountain precipitation, streamflow, reservoir status, soil moisture, and drought indices. DNRC receives information from the listed agency:

Contributing Agency(s)	Subject Area
NWS	a) Weather forecasts
NRCS	b) Snowpack, mountain precipitation
USGS	c) Streamflow
Reclamation, USGS	d) Reservoirs (federal)
DNRC	e) Reservoirs (state)
Montana Agricultural Statistics Service	f) Soil moisture
Montana Climate Center, NWS	g) Palmer Drought Severity Index
NRCS	h) Surface Water Supply Index

The following tables appear in the Report:

Table #	Data summarized
1	Snowpack and year-to-date precipitation
2	Monthly average streamflows
3	Status of Reclamation reservoirs
4	Status of state-owned reservoirs
5	Soil moisture conditions
6	Palmer Drought Severity Indices (PDSI)
7	Surface Water Supply Indices (SWSI)

Appendices in the report include:

Appendix	Topic
A	Temperature, precipitation data
B	Snow precipitation update
C	Reservoir storage data

During the reporting season, copies of the report are mailed by the 15th day of each month to the DAC, state library repositories, state agencies, professionals and interested citizens. The report is also entered on the state electronic bulletin board.

State Electronic Bulletin Board System

The state's electronic bulletin board (EBB) system provides access to the same water supply and soil moisture data used by the DAC. The data can be accessed by personal computer with a phone modem from anywhere. The user dials 1-800-962-1729, or in Helena, 444-5648, to get on the system. By typing "N", the user will access the NRIS menu. The NRIS menu will have a category for drought information. The drought file will contain snowpack, streamflow, soil moisture, weather, and reservoir data. Brief narratives assist users in interpreting data. Assessments by state agencies identify anticipated natural resource and economic impacts by region and industry. The SWSI and PDSI maps are available in graphic format for review as well.

Annual Report

An annual report summarizing the year's drought activities will be prepared. This report will include the annual summary submitted by each participating state agency. Agency reports will include assessment and response activities taken by that agency over the preceding months, a list of drought management objectives for the year, actions taken to mitigate drought impacts, and a summary of the problems encountered and successes realized by the agency.

DNRC staff will combine state agency summaries with federal agency reports into a final report of DAC activities for the year. This report will be used to review and evaluate agency responses, draft suggestions for legislative initiatives, and amend the state drought plan as needed. The final report will be used to plan agency response during future droughts. Recommendations for improving agency response will be presented and discussed at the October DAC meeting.

News Media Coverage

Public awareness is the key to mobilizing the drought impact mitigation process. To meet this goal, timely and widespread dissemination of useful information is necessary. Information on drought conditions, DAC meetings, local planning efforts, and state and federal assistance programs will receive statewide coverage to reach all of those affected by drought. News media will be invited to DAC meetings, and DNRC will periodically issue news releases.

DNRC staff will be responsible for ensuring that press, radio, and television contacts are given notice of DAC meetings. DAC agendas will be mailed to the news media and press releases will be issued by the chairperson announcing the meeting time and place. Copies of information handed out at the meetings by reporting agencies are made available to media representatives upon request and are posted on the EBB.

Press

DNRC will prepare and distribute news releases to the media. Federal agencies that provide the DAC with data are encouraged to issue their own news releases summarizing water supply and moisture conditions. In matters relating to DAC decisions or actions, DNRC will coordinate press releases with the governor's office. News releases that desribe activities of state agencies will be coordinated by DNRC and appropriate agency public relations offices.

DNRC will prepare news releases when drought conditions change, following meetings of the DAC, or any official drought-related activity of a unit of state or federal government. DNRC will be responsible for the distribution of any relevant material that accompanies news releases including maps, charts, and general information. Newspapers are encouraged to print maps indicating water supply and moisture conditions across the state.

Public Service Announcements

DNRC will work with agency representatives to develop public service announcements (PSAs) for distribution to radio and television stations to inform the public of worsening fire hazard, water shortages, water conservation efforts, official land use restrictions, and other topics relevant to drought management. PSAs in the past have featured the governor requesting that residents conserve water or respect the danger of wildfire. The governor will be encouraged to participate in future PSAs when warranted by conditions.

Television and Radio

DNRC will mail agendas to local television studios several days prior to DAC meetings. Interviews of the DAC chairperson or members will be encouraged before or following meetings. Press releases that summarize meetings will be sent to radio stations across the state since listening audiences are extensive, especially in agriculture.

V. DROUGHT ASSESSMENT

The term "assessment" is used in several different contexts in this plan. One deals with the assessments of water supply and moisture conditions. Another is drought impact assessment which summarizes the nature and extent of damage that drought has caused or is likely to cause to a natural resource or a sector of the state's economy. A third type of assessment evaluates the ability of local citizens and resources to mitigate drought impacts.

This section deals primarily with drought impact assessment which begins each spring, before impacts occur and continues as long as drought conditions persist. Timely and complete drought impact assessments are necessary to formulate effective responses. Effective assessment systems are developed over time and are based primarily on experience gained during drought.

ROLE OF ASSESSMENT

Assessing the potential for drought impacts provides a link between monitoring and response functions of drought management. In other words, the impact assessment will help decision-makers determine how and when to respond to an anticipated impact with an effective action. An effective impact assessment system informs state agencies, resource managers, the public, and the DAC of changes that can be made at the local and state levels to avoid economic loss and resource damage.

Ideally, relevant information should reach potentially-affected parties in time for them to take appropriate mitigative action. Through comprehensive impact assessment, the DAC can quantify losses incurred by those who mitigate impacts as opposed to those who take no mitigative actions. The difference between the two scenarios can be used to underscore the benefits of mitigation planning. Use of a risk assessment approach is helpful in expressing the probability and extent of impacts.

Each agency will assess drought impacts that are likely to occur based on drought information, and from actual observations gathered from personnel and residents in the field. This information will enable the DAC to:

1) be informed of current drought impacts;

2) forecast additional, imminent impacts;

3) evaluate actual damage;

4) consider mitigation alternatives; and

5) take action to mitigate further damage.

Drought impact assessment begins with state agencies and continues with individuals who are impacted by drought. Changing conditions cause both government and individuals to continuously reassess alternative ways to reduce impacts to resources and communities. Impact assessment should indicate what losses could occur if drought conditions continue and mitigation measures are not implemented. Future losses can then be projected for worsening drought scenarios. When probabilities are assigned to each scenario, the risk of economic or resource loss can be quantified and reported. Informed decisions can then be made since trade-offs are known.

In the early stages of a drought, most of the DAC agenda will be used to report and assess drought conditions by those agencies that monitor soil moisture, hydrological, and meteorological conditions. As drought conditions worsen and trouble spots are identified, more meeting time will be dedicated to reporting and assessing drought impacts and discussing mitigation strategies.

Each state agency will draw on a variety of sources of information to determine the type and extent of impacts currently being experienced or expected. These sources should include their district or regional offices, private organizations, and individuals. Projections of damage due to drought should be made using the best information available and past experience as a guide. Once a region of the state reaches the **Alert** status, as described in the following section, each agency will be required to provide a written impact assessment report with a response, and present the findings to the DAC. The state water plan section for drought management recommends that assessments be prepared on a regular basis for drought-related impacts to;

(1) specific crops and livestock,

(2) tourism,

(3) energy production,

(4) domestic water supplies,

(5) wildfire, and

(6) fish and wildlife.

The plan section recommends that the state: *"Coordinate the efficient and timely assessment of impacts related to various water uses. A list of the individuals with the expertise to assess impacts should be maintained."*

ASSESSMENT BY SUBJECT AREA

This section includes reviews, by subject area, of various methodologies used to assess the effects of drought on certain economic and resource sectors. It describes existing activities undertaken by agencies to assess how and to what extent drought has impacted, or will likely impact, the resources and economy of the state. The agencies responsible for these assessments and their requirements are outlined in section VIII; State, Federal and Local Response Actions, and in Appendix A, State Agency Annexes.

Dryland Farming

The Department of Agriculture (Agriculture) assesses impacts to dryland farming. The Montana Agricultural Statistics Service, in cooperation with Agriculture and the National Weather Service (NWS), produces The Crop-Weather Report on a weekly basis between April through October and monthly between November through March. The report provides a detailed summary of precipitation and temperature for stations in each of the seven major geographic regions of the state. Historical data are included for comparative purposes.

The Crop-Weather Report includes a list of the number of days suitable for field work; the progress of planting and harvesting as a percentage of average for the date; the percentage of topsoil and subsoil moisture supply expressed as short, adequate, or long; and the growth status and condition of major crops. The report also includes weather forecasts by the National Weather Service.

State extension offices provide detailed reports on dryland farming conditions upon request. State agricultural experiment stations throughout the state provide state extension service with crop and range information. Using these data and information from other sources, Agriculture will assess the economic impacts of drought to the various agricultural sectors.

Livestock Operations

The Department of Livestock (Livestock) is responsible for assessing the impacts of drought on the livestock industry. The representative from Livestock reports on range conditions, stock water availability, and other pertinent matters to the DAC beginning in April each year. Livestock uses its network of stock producers, 370 deputy state veterinarians, 20 brand inspectors, and 650 stock inspectors to gauge the needs and health of the industry at a particular time. The Montana Agricultural Statistics Service collects and reports data concerning range conditions and the birth and survival rates for cattle and sheep.

Through contact with state veterinarians and the Department of Livestock Diagnostic Laboratory Division, Livestock can determine the presence and incidence of disease and the health of livestock located in regions affected by drought. By monitoring brand inspections, certificates of veterinary inspection, and import permits, Livestock can track the movement of livestock across county and state lines. This information is useful in determining which regions are lacking adequate range forage.

Through communication with agencies such as NRCS, USFS, BLM, county extension agents, and conservation districts, Livestock can evaluate availability of stock water and range forage for a variety of lands and elevations. Stock water ponds and surface water supplies are often depleted before range feed. This situation necessitates importation of water or export of stock.

Assessment activities for the long term should include establishing a data base of information for future use. By reviewing records of past drought periods, projections can be made as to the probability of different outcomes given current conditions. The Livestock annex, like all state agency annexes to this plan, should be updated periodically to reflect knowledge gained during previous drought periods.

Irrigation Water Supplies

Several state and federal agencies report to the DAC on the adequacy of irrigation water for irrigated agriculture. The NRCS generates the Surface Water Supply Index (SWSI) which provides an assessment of future supplies of irrigation water for the growing season. It is used to determine the surface water supply in mountainous river basins dependent on runoff from snowpack for streamflow. The SWSI considers mountain snowpack, mountain precipitation, reservoir storage, and soil moisture in its computation of an index for each of 52 river basins in the state.

The Bureau of Reclamation manages several large storage projects in the state. Most of these projects supply water for irrigation. Operating plans are formulated with water user groups and projections for irrigation supplies are prepared each spring. Reclamation must consider other factors in reservoir management such as flood control and recreation.

The Army Corps of Engineers manages a portion of federal reservoirs for flood control. Storage for irrigation supplies can be limited by the volume of storage that must remain vacant to accommodate flood waters. As the season progresses, reservoir plans are adjusted to reflect changes in water supply. In addition to annual operating plans, state and federal agencies should develop and adopt reservoir operation plans that include drought contingencies.

Municipal and Domestic Water Systems

During drought conditions, the Department of Environmental Quality (DEQ) prepares assessments of municipal water supplies on a monthly basis for the DAC. DEQ is responsible for assisting communities in monitoring the adequacy of their municipal water supplies. Operators of municipal water delivery systems are licensed by DEQ and are required to attend workshops and training seminars to update and improve operational skills. Operators sample municipal water supplies on a regular basis for testing by DEQ for water purity and compliance with state and federal drinking water standards.

Drought conditions can concentrate impurities that exceed drinking water standards for communities that depend on surface water for municipal supplies. In communities that depend on groundwater for municipal water supplies, drought conditions can cause the rate of use to exceed the rate of recharge resulting in a net annual loss to an aquifer. This situation may cause the supply to change in quality, necessitating additional water treatment measures by users or operators to meet standards.

DEQ will closely monitor compliance with discharge permits and communities with a history of water supply and quality problems during drought and report its findings to the DAC. DEQ maintains a list of these communities for monitoring and assessment purposes. DEQ can assist these communities in applying for grants and loans for water system improvement.

Fish and Wildlife

The Department of Fish, Wildlife, and Parks (DFWP) is responsible for monitoring, assessing, and responding to the effects of drought on fish and wildlife. The DFWP annex to this plan describes the procedures and activities used to assess and mitigate impacts to fish (Appendix A).

DFWP focuses on streamflow levels that are obtained twice weekly from USGS stream gauge data to determine fishery impacts. DFWP maintains a list of chronically and periodically dewatered stream sections to target monitoring during periods of low flow. During drought, temporary gauges are installed in stream reaches that are susceptible to dewatering. The severity of conditions determines the appropriate response. Current data enables fishery managers to detect changes in flow early enough to take measures that will mitigate damage to fish populations (see Response section).

Personnel from regional offices investigate river reaches that have dewatering problems. Data collected from fish counts, spawning runs, and past droughts are assessed in the context of current conditions. Fishery biologists also monitor spawning activity, and unsuitable conditions are reported to Helena DFWP and the DAC. If conditions warrant, DFWP activates its instream water rights notification procedure as outlined in its plan annex. If DFWP does not have an instream right for a river reach threatened by dewatering, it may call a meeting of irrigators to explore options for leaving more water in the river to protect fish habitat. The governor may elect to send a representative to such meetings to facilitate a short-term solution. Another alternative is for DFWP to purchase and deliver water to livestock, allowing stockmen to stop diverting streamflow. DFWP may activate emergency fishing regulations including special catch limits or closure if conditions warrant.

DFWP prepares weekly reports during periods of low streamflow assessing and identifying actual and potential impacts to fisheries. Reported observations of fisherman and recreationists should be incorporated into assessments. DFWP will report on assessment and response activities monthly at DAC meetings. Written assessments and responses will be prepared for the DAC meetings.

Impacts to wildlife are monitored by regional offices and DFWP's Wildlife Division in Helena. If drought is affecting wildlife, DFWP will report its findings and mitigation plan to the DAC. During drought years, special regulations for fall hunting season may be modified with the goal of bringing big game populations into balance with available range forage.

Wildfire

DNRC is responsible for coordinating the state's response to wildfire with federal and local response units. In April of each year, DNRC's Missoula Fire Center assesses fire potential for the coming fire season. Equipment and funding for firefighting are allocated in accordance with this assessment.

Statistics are provided periodically during the season for the number of fires and acres burned. Maps and charts are used to illustrate the potential for fire for the regions of the state. DNRC reports directly to the public through the media and provides information as requested on land-use restrictions and closures.

Information concerning state and local conditions is also available from the U.S. Forest Service regional headquarters and from local ranger stations which are listed in local phone directories. DNRC issues news releases, as conditions warrant, to inform the public of current conditions. Public service announcements are aired statewide as fire conditions worsen.

The Fire Center depends on observations from recreationists and those who travel and work on public lands to report any indication of fire or imminent fire danger to local, state, or federal authorities. This support from the public often results in a quicker fire response, preventing extensive resource damage. DNRC fire officials will provide the DAC with assessments before and during fire season that describe wildfire potential on state and federal lands.

Public Lands

Public lands in Montana are administered by a variety of state and federal agencies including DNRC, DFWP, BLM, USFS, USFWS, NPS, Bureau of Reclamation, and Army Corps of Engineers. As drought conditions develop, these agencies collect information on conditions from various sources including field biologists, resource managers, reservoir operators, wildfire assessment teams, and the general public. Forecasts and assessment reports are reconciled with plans and actions taken when appropriate. Agencies will report changes in conditions or land use restrictions to the DAC in a timely manner.

Energy Production

Managers of hydroelectric facilities develop annual operating plans based on energy demand and projected surface water supplies. Arrangements to accommodate downstream fisheries, flatwater recreation, and navigation needs are considered in the annual operating plan. In the Columbia River drainage, reservoir operating agencies work closely with the Northwest Power Planning Council (NPPC) and agencies such as DFWP to balance instream flow and energy requirements.

Changes to reservoir plans may be made each year to reflect changes in the water supply outlook. Final operating plans are formulated after comprehensive assessments are made. Public comment on reservoir operations is documented at open meetings and taken under advisement by managing agencies. Reservoir plans for the season are announced by the Bureau of Reclamation and Montana Power Company through press releases as summer approaches.

Representatives of Montana Power Company, NPPC, Bureau of Reclamation, and the Army Corps are encouraged to report reservoir operating plans to the DAC each spring so that DAC agencies can identify potential problem areas and address concerns early before drought worsens. Toll-free phone numbers provide updated reservoir information to the general public.

Tourism

The tourism industry can suffer greatly from the effects of drought. Loss of non-resident and resident tourism business add to the economic impact suffered by the state's commerce during periods of drought. The Department of Commerce is responsible for monitoring and assessing the impacts of drought on tourism. Commerce will report monthly assessments to the DAC and formulate appropriate responses consistent with its annex to this plan.

The Institute for Tourism and Recreation Research at the University of Montana records and analyzes visitation figures to determine tourism's contribution to the state's economy. These figures can be used by Commerce to assess current and future impacts of drought on visitation and recreational use. Commerce has the ability to use its network of industry contacts to detect and monitor changes in levels of tourism in the state.

A toll-free phone number for long-distance inquiries is maintained by the tourism promotion division (See Apendix A, Commerce). Information is collected regarding current perceptions of residents and non-residents of conditions in the state. Data summarizing employment in the "services" sector (hotels and other lodging) is available on a monthly basis. These data can be reconciled with data from previous months or years to assess impacts.

Recreation

When the potential for wildfire on public lands increases, state and federal agencies charged with land management may be forced to implement restrictions on use. Public land closures are avoided, if possible, since recreational and occupational users have been helpful in reporting use violations and fires in the past. Closures should only be used to protect public resources and should not unfairly exclude recreationists while allowing activities such as logging to continue. Commerce can answer inquiries concerning fire conditions using the toll-free tourism phone line.

River recreation is impacted by low streamflows resulting from low mountain snowpack and precipitation. Fishing guiding, whitewater rafting, flatwater boating and fishing, and related service businesses all suffer during periods of drought. Commerce can assess the impacts of drought to these businesses by conducting surveys of licensed guides.

Secondary Commerce

The Department of Commerce monitors and assesses economic impacts to business and industry resulting from drought. Commerce collects data on income, wages, salaries, and employment at the state and county levels. Using these figures, Commerce can monitor the effects of drought on the state's economy. Responses to impacts can be evaluated later to gauge effectiveness and plan for future drought.

The industries most likely to be affected by drought are those which depend on the state's natural resources for their well-being. The two major industries affected by drought are agriculture and tourism. Timber harvesting can be directly affected by forest use restrictions or closures during periods of high wildfire potential.

Secondary businesses include those with customers that have been directly affected by drought and whose ability to spend has been reduced. The Department of Commerce assesses the impact of drought on secondary businesses by reviewing income and employment data available from the state's Department of Labor and Industry and the U.S. Bureau of the Census (See Appendix A for Commerce Annex).

VII. DROUGHT RESPONSE

In the following section the term "response" refers to an action that is taken to preempt or mitigate an impact caused by drought. The type and timing of responses depend on factors such as characteristics of the affected region, rate of onset of impacts, legal implications, and availability of mitigative responses.

TRIGGERING MECHANISMS

In keeping with the guiding philosophy outlined earlier in this plan, the timing of responses to drought must be preemptive in nature. To make this plan operational, drought must be defined in terms of a comprehensive, quantitative measure that is used as an objective triggering mechanism for specific state action.

At the same time, the state must retain flexibility to address situations where strict adherence to or reliance on a specific threshold would be inappropriate. The state must also ensure that this discretionary latitude does not weaken the proactive approach by forestalling timely responses.

Drought Indices

The Palmer Drought Severity Index (PDSI) and the Surface Water Supply Index (SWSI) are the primary indices used by the DAC as indicators of drought. The PDSI is a soil moisture index based on measured precipitation, estimated evaporation and evapotranspiration, and climatic characteristics. PDSI figures are available for over 140 stations statewide.

The SWSI projects streamflow for runoff and snowmelt-driven hydrologic regimes. The SWSI is based on snowpack, mountain precipitation, soil moisture, and reservoir storage. The NRCS calculates SWSIs for over 50 individual Montana river basins.

As noted earlier, SWSI and PDSI values are generally 2 to 3 weeks old when reported at DAC meetings. Consequently, they do not reflect the effect of precipitation occurring during the period of time between the calculation and presentation of data. Often, current moisture and water supply conditions have changed significantly since SWSI figures were last released.

Since the SWSI provides a projection of future surface water supplies, it is better suited for forecasting conditions than the PDSI, which summarizes soil moisture data for a geographic location factored with long-term climatic data for that location. As a long-term indicator of drought, PDSI values are influenced by the conditions of previous months. Therefore, PDSI values may be slow to indicate a recovery from drought following a period of normal precipitation or the return of drought following recent dry conditions.

Decision-makers may interpret soil moisture and the recovery from drought as satisfactory, when in fact, precipitation has been well below average for weeks. A close examination of additional, current data by the DAC is therefore warranted. Data for this period is addressed by consideration of " other drought indicators " in the response strategy.

Other Drought Indicators

A thorough examination of additional current moisture and water supply data enables decision-makers to confirm the conditions as represented by the PDSI and SWSI. By considering a variety of drought indicators, the DAC can be assured its actions are timely and appropriate.

These "other" indicators include, but are not limited to:

1) Precipitation since prior month's end;

2) Snow water equivalent of remaining snowpacks;

3) Current and projected reservoir storage levels;

4) Current streamflows;

5) Current soil moisture levels;

6) Short-range weather forecasts;

7) Rate and nature of change in any of these factors;

8) Agency personnel field observations;

9) Reports from the public.

Although some of the indicators listed above are factored into the PDSI and SWSI, the DAC must decide whether a closer examination of the additional data supports or conflicts with SWSI and PDSI values for a particular region or county. If the other indicators conflict with the SWSI or PDSI, the DAC can defer to the judgement of the DAC scientists.

Emergency meetings

DNRC will continue to monitor drought conditions and report to the chairperson if conditions worsen. If conditions warrant, the chairperson can call an emergency meeting of the DAC to confer with the committee regarding a state disaster declaration or a drought status change.

In lieu of an emergency meeting, the DAC chairperson can instruct DAC agencies to implement actions when a set of predetermined conditions occurs. This stipulation is included because drought conditions can worsen quickly. It provides a measure of safety since delaying a response until the next monthly meeting could preclude a timely and effective response.

DROUGHT "ALERT"

Execution of the response function of this plan corresponds with two levels of below average moisture conditions. State and local response is triggered by quantitative levels of the PDSI and the SWSI. As mentioned in the preceding section, PDSI and SWSI values must be confirmed by an examination of additional current data. Notwithstanding a discrepancy between the two indices and current data, a drought **Alert** will be in effect when, by April 15, monitoring indicates that a county is entering initial levels of drought.

An Alert status will be assigned by the DAC, if by April 15, a river basin registers a SWSI index of -2.5 or less, or the same area has PDSI values of -3.0 or less, and additional current data, such National Weather Service (precipitation, forecasts, soil moisture) and U.S. Geological Survey (streamflow) confirm the PDSI and SWSI values for the preceding month. Counties that had drought conditions entering the preceding winter will be closely monitored for change early in the season.

When a county is assigned an Alert status by the DAC, a series of actions at the state and local levels is triggered. The appropriate actions will depend on the time of year, the area's economy, and location of the county. (Specific agency responses can be found in the "Drought Responses" sections of Part VIII: Federal, State, and Local Response Actions and Appendix A: Agency Annexes.)

State Response

State actions taken during the Alert period are important for mitigating drought impacts. During this period, the state advises counties to consider appropriate preemptive measures at the local level would be appropriate. State agencies anticipate possible impacts to people and resources and plan accordingly. The required state actions are listed below:

1) The DAC will request that the governor advise counties with an Alert status to convene local drought advisory committees (LDACs) and communicate with the DAC regarding local conditions. This request is made by letter to county commissions and by press release.

2) The DAC will request state agencies to activate their plan annexes and prepare impact assessments. State agencies will present response strategies to the DAC in written form for the worst case scenario of worsening conditions.

3) DNRC prepares news releases, to be issued by the governor's office, summarizing conditions and explaining reasons for activation of LDACs.

4) The state library will issue water supply and/or moisture condition maps to the media for publication and broadcast.

5) The DAC staff will distribute information to LDACs, and county commissioners including materials to guide local drought management operations, and inform localities of available state and federal assistance.

6) The DAC considers increasing the frequency of meetings in response to the nature and rate of changes in drought conditions.

7) DNRC coordinates the preparation of additional updated SWSI and PDSI maps and assessment reports.

8) The DAC advises state and federal agencies to review reservoir operation plans and implement appropriate drought contingency plans.

County Response

LDACs review water supply and moisture data gathered by state and federal agencies and, if warranted, prepare to mitigate imminent impacts.

1) County Commissions will activate LDAC and review and update membership to determine whether all local, water-related interests are represented. LDAC meetings must be advertised using local media. LDAC should start meeting on a regular basis.

2) LDAC will appoint a chairperson to coordinate local efforts and provide DAC staff with status report on local conditions and anticipated needs. LDAC chairperson will refer to local drought management operations manual for checklist of potential problem areas.

3) A county with an Alert status must closely monitor its municipal water supply to determine adequacy for its foreseeable future demands. If applicable, discharge permits must be monitored for compliance. Concerns should be reported immediately to DEQ and DAC.

4) Enacting a municipal water rationing ordinance should be considered if conditions have not improved by June 1. At a minimum, voluntary water conservation measures should be implemented.

5) LDACs initiate dialogue with county USDA Food and Agriculture Committee (FAC) to ensure coordination of local crop damage assessment reports (DARs) used to establish county eligibility for Secretarial Natural Disaster Determination (USDA) assistance programs (see appendix for chronology of actions for USDA natural disaster determination process).

6) If applicable, the LDAC should initiate dialog with a standing river basin planning committee concerning water supply shortages and potential impacts to water uses and businesses.

"SEVERE" DROUGHT

A county or region will be assigned an **Severe Drought** status when drought indices indicate steadily worsening conditions and precipitation forecasts indicate no improvement in the near future. A review of **current** water supply and moisture data gathered from additional sources, such as NWS (precipitation, forecasts, soil moisture) and USGS (streamflow) is used to confirm the most current PDSI and SWSI values.

For purposes of this plan, a county(s) will be assigned the Severe drought status, if by May 15, a river basin(s) of that county(s) reaches a SWSI index of -3.5 (extremely dry) or less, **or** has PDSIs of -4.0 or less (extreme drought), **and** the projected precipitation or water shortage is likely to create undue hardships for water uses and users.

NOTE: This status is **not** related to the federal Secretary of Agriculture (USDA) Natural Disaster Determination process. It can provide support for the **state's** drought disaster declaration process. (Specific agency responses are found in the "Drought Responses" sections of Part VIII: Federal, State, and Local Response Actions and at Appendix A; Agency Annexes.)

State Response

1) The DAC requests that the governor officially declare counties with DAC Severe Drought status a drought disaster.

2) The DAC will request that state agencies implement appropriate mitigation responses, based on current impact assessments in accordance with agency annexes to this plan.

3) DNRC will issue news releases through the governor's office explaining current drought conditions and recommended actions.

4) DES will contact local disaster services in counties with a Severe Drought status regarding federal disaster designation process.

5) DAC will increase the frequency of meetings with emphasis on assessment and response activities. The DAC will continue to monitor conditions, especially for significant changes.

6) On behalf of the governor, DES will facilitate the federal natural disaster determination process with state USDA officials and report progress to governor and DAC.

7) DEQ Water Quality Division will contact communities with a history of municipal water supply problems or discharge permit noncompliance to determine the extent of water quantity and quality and report these findings to DAC.

County Response

1) LDACs and counties will continue to monitor municipal water supplies and MPDES compliance for adequacy and quality and report assessments to DEQ.

2) If a county has a Severe drought status and an active river basin planning committee, the committee should coordinate responses with the county LDAC.

3) LDAC's will recommend to county commission to request governor through DES, to initiate Natural Disaster Determination process with Secretary of Agriculture.

4) LDAC should refer to LDAC operations manual for specific action recommendations in counties under drought emergency in local areas of concern.

5) LDACs will send impact assessment reports to DAC to inform state agencies of local conditions and needs. Representatives of LDACs are encouraged to attend DAC meetings to report local conditions and needs.

6) LDACs will use local press and radio for public service announcements regarding water conservation, status of local conditions, LADC meeting times, and restrictions or prohibitions.

7) LDAC's will maintain dialogue with USDA county FAC to ensure damage assessment of crops is underway.

8) Local government will implement municipal water supply rationing ordinances and enforcement provisions.

VIII. STATE, FEDERAL, AND LOCAL RESPONSE ACTIONS

The following section identifies most responsibilities of DAC member agencies and supporting agencies in monitoring and assessing drought and responding to its impacts. Listed are state, federal, and local government response actions for the mitigation of drought-related impacts. This section is intended to supplement, not replace, the state agency annexes to this plan included in Appendix A.

For each governmental entity listed and where applicable, activities are divided into "ongoing activities" and "drought response" activities. Ongoing activities represent long-term efforts that reduce the vulnerability of people and resources to future drought. "Drought responses" are short-term, mitigative measures taken during a drought, or if drought is imminent.

Where applicable, "Drought responses" is divided into "Alert" responses and "Severe Drought" responses corresponding to the two-tiered drought status triggered by worsening conditions. The timing and order of responses will vary, depending on conditions. Each agency must determine the appropriate type, amount, and timing of a specific response.

STATE AGENCIES

State agencies that are members of the DAC are committed to certain responsibilities in the areas of monitoring, reporting, assessment, and response that are described in more detail in the agency annexes detailed in Appendix A.

GOVERNOR'S OFFICE

As the most visible figure of state government, the governor is in the best position to draw attention to the effects drought can have, or is having on the state and unite the government and people in a coordinated response. This is accomplished by official actions, such as a disaster proclamation, public service announcements and by direct appeals to the citizens through the media. The governor's DAC representative must be appointed by the governor. Traditionally, the lieutenant governor has served as the DAC chairperson.

Ongoing Activities

1) Appoints a representative to act as chairperson of the DAC.

2) Appoints additional, non-voting members to the DAC to represent public and private water-related interests. DAC membership should be reviewed each year by the chairperson to determine if membership is comprehensive with respect to interests affected by drought.

3) Through the chairperson, convenes the DAC on or around the 15th day of February and October to assess moisture and water supply conditions.

Drought Responses
Alert

1) Responds, as conditions warrant, to the information provided by the DAC in the annual "Governor's Report Describing the Potential for Drought", by directing chairperson to convene the DAC meetings and activate the Montana Drought Response Plan.

2) Supports and coordinates the monitoring, assessment, and response functions with the Northwest Power Planning Council for the Columbia River Basin and other basin states.

3) At the recommendation of the DAC, urges county commissions in regions with a high probability of drought, to form local drought advisory committees to mitigate drought impacts and serve as a local contact for the DAC.

4) Makes appeals, as conditions warrant, to agriculture, industry, and domestic water users to conserve limited water supplies. This is accomplished through public service announcements for radio and television, press releases, announcements at DAC meetings, and attendance at regional or local drought meetings.

5) Promotes awareness of the dispute resolution services offered by the governor's office. The services of the Montana Consensus Council can be used to resolve conflict between water user groups.

6) Issue news releases to the press following official state actions and DAC meetings advising citizens of conditions and actions to take on a local basis.

Severe Drought

1) Reviews water supply information and, if conditions warrant, issues executive order imposing a state of emergency not to exceed 20 days in duration. This allows the suspension of processing of applications for water quantity permits by DNRC for 20 days as well as other emergency measures deemed appropriate and within the law.These may include restrictions on water use or use and/or travel on public lands.

2) If, at the conclusion of 20 days, conditions prompting the executive order are the same or worse, issue an executive order declaring a drought disaster not to exceed 30 days. This action suspends, until declared otherwise, the authority of DNRC to process applications for new water uses. It also clears the way for restrictions on controlled burning, travel and types of activities allowed on public lands, and restrictions on water use. The proclamation adds an element of urgency to the situation and supports the request for a federal disaster designation.

3) At the request of county commissions, initiates the Secretarial Natural Disaster Determination process by asking state USDA officials to request damage assessment reports (DARs) from county USDA emergency boards. After DARs are completed, request a natural disaster determination from the Secretary of Agriculture.

4) Authorizes access to the Environmental Emergency Contingency Program. This fund can be used for emergency situations, such as purchasing or leasing water to augment low streamflow.

5) Holds regional drought meetings to hear the concerns of local economic sectors and interest groups concerning local conditions, the state's drought response, and assistance.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

DNRC is the primary state agency with regulatory authority governing the use of water. As surface water supplies diminish, the tendency for conflict between interests competing for quantities of water increases. Initially, such conflicts are addressed by agency policy and ultimately with administration of the state's water rights laws. DNRC also has regulatory authority to manage the state's water storage projects, water quantity measurement, and groundwater appropriations. DNRC supports the "Montana Watercourse" adult water education program and the "Project WET" program for teachers and students located at Montana State University.

Ongoing Activities

1) Pursuant to **2-15-3308, MCA 1991 Drought Advisory Committee**, administer and staff the DAC, and participate as a voting member on the DAC.

2) Administers the Renewable Resource Grant and Loan Program to promote and advance the beneficial use of water by providing grant and loan financing for projects that promote the development and efficient use of water resources.

3) Administers the Montana Floodplain and Floodway Management Act, which applies to any construction within the designated 100-year floodplain for a stream.

4) Conducts water resources planning activities including basin planning, policy formulation, and other activities pursuant to **85-1-203 MCA**, state water plan, that promote conservation, development, and utilization of the state's water resources.

5) Promotes and facilitates awareness of Montana's water resources and related issues through educational programs offered by The Montana Watercourse and Project Wet at Montana State University in Bozeman.

6) Continues to participate as a cooperator in the streamflow monitoring network with USGS and DFWP.

7) Through the Conservation District Bureau, conducts workshops for conservation district supervisors and irrigators on administration of the Montana Natural Streambed and Land Preservation Act (310 Permit program) and train irrigators onsoil moisture monitoring and irrigation practice. Grazing and riparian land management education is also available.

8) Encourages and assists irrigation districts and water user associations in developingand implementing drought contingency plans. Such plans may include, but arenot limited to, recommendations for irrigation scheduling, voluntary conservation,and structural improvements to irrigation delivery systems.

9) Coordinates the development and implementation of drought contingency plans forstate-owned reservoirs with water users and DFWP. Such plans must clearly identify minimum pool levels, and minimum instreamflow requirements downstream of the reservoir. This measure is required to prevent sedimentation from entering stream courses below the reservoir and to protect aquatic and fish habitat.

10) Pursues the implementation of **85-2-150 MCA Chronically dewatered watercourse-identification** which identifies such waters, the extent and effects of the impacts, and possible solutions to conflict among users including installation of measuring devices.

11) Provide timely information, as requested, for inquiries concerning water rights. Inquiries increase significantly during drought.

12) Process and expedite temporary water right transfers in compliance with **85-2-407 MCA Temporary changes in appropriation right**. Transfers can mitigate drought impacts by redistribution of water from lower to higher value uses.

13) Emphasize that state law allows the lease **(85-2-435 MCA)** or sale of surplus **(85-2-415 MCA)** or salvaged **(85-2-419 MCA)** water. These laws can serve to mitigate drought impacts by redistributing water from areas of surplus to areas of deficit water supply.

14) Pursuant to **Section 85-5-111. Water commissioner and mediator education**, provide an educational program for water commissioners and mediators that includes training seminars on duties of commissioners, mediation techniques, and water measuring techniques, and prepare a mediation manual. Develop an outreach program that identifies persons who might serve as water commissioners or mediators.

15) Facilitate the implementation of new and existing statutes that allow the leasing of consumptive water rights for the enhancement of instream flows.

16) Assist watershed planning groups to develop and implement drought mitigation plans.

Drought Responses
Alert

1) As needed, prepare and distribute the DNRC Water Supply and Moisture Condition Report which summarizes data received by state and federal agencies and is the primary source of data used by the DAC for drought monitoring and decision-making.

2) Provide assessments, as conditions warrant, of water supply conditions and report findings to the DAC.

3) Assist LDACs in managing drought at the local level by providing water supply and moisture condition data, strategies for mitigating drought impacts, and information on sources of technical and financial assistance.

4) In river basins with ongoing basin planning initiatives, encourage long-term drought management planning and coordination with LDAC's.

Severe Drought

1) Administer the Renewable Resource Grant and Loan Program Emergency Fund, a limited source of funding for emergency situations such as municipal water supply development and supplementing critical streamflows to avert collapse of fisheries.

2) Implement DNRC's "Water Use Conflict Resolution Policy" which outlines the procedure for grievances and enforcement of water rights (see Appendix A DNRC Annex).

3) Advise governor on imposition of executive order imposing temporary moratorium on processing of new water use permit applications by DNRC and other drought disaster determinations.

4) Expedite the processing of "change of use" applications from water users attempting to mitigate drought impacts to irrigated agriculture by transferring water from one area to another. Drought conditions change the accessibility of normal points of diversion of water. A "change of use" must be approved before an irrigator can change the point of diversion.

5) Expedite the process for issuance of new water use permits, especially for groundwater permits to deepen or drill wells which serve as a short-term alternative to surface swater during drought provided there are no legitimate objections.

6) Closely monitor state-owned reservoirs for compliance with drought contingency plans.

7) Enforce water right provisions of Montana Water Use Act.

State Lands

DNRC is responsible for the administration and management of approximately 5 million acres of state-owned land. DNRC's primary land management responsibilities relative to drought are in the areas of fire prevention and suppression, and protecting the productivity of leased state lands. Most of this land is leased for agricultural purposes, such as grazing to generate revenue for the state school trust fund.

Ongoing Activities

1) Participates, as a voting member, on the DAC.

2) Implements programs to conserve water on state lands.

3) Promotes safe use of public lands through fire safety programs.

4) Updates, on a daily basis, the fire danger rating system by evaluating current weather and fuel moisture conditions gathered at over 90 reporting stations in Montana.

5) State Lands field offices provide specific fire information on a regional basis.

6) Pursuant to state law,protects and ensures the wise management of school trust lands by taking measures to reduce the vulnerability of the land to impacts caused by drought conditions.

7) Performs field evaluations of the condition of state lands leased for grazing and agriculture to determine an appropriate plan to prevent the long-term decline in productivity of the lands from over-use exacerbated by drought conditions.

Drought Responses
Alert

1) Prepares regional contingency plans to DAC for grazing and agriculture to prevent long-term decline in productivity of the lands from over-use exacerbated by drought conditions.

2) Minimize areas of wildfire impact through wildfire prevention, pre-suppression,and suppression activities and programs.

3) Identifies areas of extreme fire danger due to drought conditions and provide continual assessments to DAC of the capabilities, resources, and sources of assistance available both within and outside the agency.

Severe Drought

1) Issues press releases to the public on fire conditions and fire prevention practices.

2) Restricts fires permitted on state lands, when conditions warrant, by canceling open burning permits and requesting the public to voluntarily cease use of open fires.

3) Imposes, as fire conditions warrant, restrictions on the types and hours of activities engaged in by persons, firms, or corporations on state lands.

4) Implements closure of state lands, when fire conditions warrant

5) During periods of fire danger, prepare a daily situation report on the usage of all firefighting equipment and activities of personnel.

6) Continue to provide DAC with assessments of fire situation on a regional basis, and report on response and suppression efforts.

DEPARTMENT OF FISH, WILDLIFE, AND PARKS

Reduced streamflow is one of the most visible and most publicized impacts of drought in Montana. Low streamflow is detrimental to the state's stream fisheries, especially for wild trout. DFWP holds water rights on a number of streams for maintenance of instream flows during periods of low flow. Streamflows are monitored statewide on a regular basis to determine where fishery damage is likely to occur.

During drought, DFWP is challenged with managing declining populations of "species of special concern" such as arctic grayling, westslope cutthroat trout, and bull trout. Reproduction and living space are threatened by natural and man-caused low streamflow. Recent successes between DFWP and water users in streamflow management during drought illustrate the potential for enhancing fisheries through collaborative efforts. Wild game populations compete with domestic livestock for limited forage during drought, requiring special game management.

Ongoing Activities

1) Protects DFWP's instream flow rights, also known as "Murphy Rights," and water reservations through expansion of stream-gauge monitoring network and instream flow protection program.

2) Participates with USGS as a cooperator in expanding and maintaining baseline streamflow monitoring network.

3) Maintains and updates DFWP list of chronically-dewatered streams to provide information on extent of stream dewatering from the fisheries and aquatic habitat standpoint.

4) Participates in development of state, federal, and private reservoir annual operating plans to minimize impacts to fish, wildlife, and recreation.

5) Reviews water supply forecasts in early spring to monitor and identify potential effects of streamflows on fish and aquatic habitat. Monitor fish populations, fishing use, and harvest statewide to ensure carryover of wild stream fisheries while maintaining reasonable opportunity for harvest in all streams and lakes.

6) Administers the Montana Stream Protection Act (124 Permit) which regulates any federal, state, county, or city government project that may affect the bed or banks of any stream.

7) Participates as a team member in the 310 permit review process of the Montana Natural Streambed and Land Preservation Act with conservation district supervisors and landowners. Help conduct site inspections to ensure considerations for fisheries in design and construction of proposed projects.

8) Participates in the development and implementation of drought contingency plans for state-owned reservoirs with DNRC.

9) Identifies high priority streams for instream flow water leasing program and obtain leases to enhance flows for sport fisheries and species of special concern.

10) Prepare public service announcements, press releases, and magazine articles to inform the public about drought effects on fisheries and how to minimize these stresses through voluntary practices.

Drought Responses
Alert

1) If NRCS spring water supply outlook reports project low streamflows for coming months, initiates monitoring of flows on streams with "Murphy Rights" and water reservations, and develops protection strategies in anticipation of drought conditions.

2) During periods of drought, prepares weekly regional drought updates or assessments for the DAC describing the status of the state's fisheries and wildlife with respect to drought-related impacts and measures taken to mitigate them.

3) Facilitates augmentation of streamflows through purchase of stored water, leasing of consumptive rights, and other innovative methods including partnerships with water users to solve dewatering problems on critical streams.

4) Convenes meetings of Upper Missouri River Advisory Committee to discuss reservoir operations, minimum flows and pool levels with Bureau of Reclamation, Montana Power Company, and recreationists.

5) With assistance from agricultural representatives, distributes educational material to water user associations describing methods to reduce trout losses in irrigation diversions.

6) When possible, installs temporary stream gauges to monitor flows for fishery evaluation studies and recreational use on river reaches that have an imminent threat of dewatering.

7) Encourages irrigators to switch from using gravel dikes to divert water to permanent design-engineered diversion structures or use of portable metal diversion devices which are less destructive to streambeds.

Severe Drought

1) If forecasts and conditions warrant, protect existing instream flow rights by notifying junior water rights holders that they may have to cease diversions and honor DFWP's senior instream flow rights (see Appendix A, DFWP's Annex).

2) Implements emergency fishing regulations on streams and lakes as conditions warrant (usually means decreasing harvest on streams and increasing harvest on lakes and reservoirs with low pool levels).

3) When warranted, make request through DAC chairperson for local meetings with irrigators, and DFWP area biologists to explore opportunities for increasing streamflows that are reaching critical levels.

4) Investigates reports of depredation of livestock forage by wildlife and implement appropriate game management actions to reduce those impacts.

DEPARTMENT OF ENVIRONMENTAL QUALITY

Of all the impacts presented by drought, those that affect human health merit the highest priority. Drought has the potential to affect both water quantity and quality. The Department of Environmental Quality (DEQ) is charged with protecting Montana's environment. During drought, DEQ will take measures to protect ecosystems from the effects of polluted water. To accomplish these objectives, DEQ will pursue a comprehensive strategy of ongoing water quality monitoring, assessment, and mitigation.

Ongoing Activities

1) Participates at all DAC meetings as a voting member and on subcommittees as directed by chairperson of DAC.

2) Maintains and updates list of communities with history of municipal water supply problems and concentrate monitoring and drought response planning efforts. Assist communities with inadequate water supply systems or wastewater treatment facilities in procuring alternative sources of funding to make appropriate changes or necessary upgrades.

3) Provides technical assistance to utilities and local health departments on water shortage response planning and implementation. Conduct training seminars for municipal water systems operators to manage systems during drought.

4) Encourages communities to educate citizens to conserve water during drought, provide list of educational materials available from county extension offices, encourage systems operators to participate in local drought planning efforts, and encourage adoption of water use restriction ordinances.

5) DEQ mails a memo to counties announcing training opportunities in xeriscaping (landscaping with drought-tolerant plants), leak detection, water rate structuring, irrigation with sewage effluent, conservation. Target audiences include water/wastewater operators.

6) Administers the Montana Pollution Discharge Elimination System (MPDES) permit system. Monitor surface water quality where point sources such as industry and municipal wastewater treatment plants discharge effluent to determine point at which receiving waters become contaminated (Decreased streamflows in receiving waters mean that a given level of discharge will comprise a greater percentage of total flow).

7) Assists municipalities in the protection of public water supply systems throughout the state.

8) Administer program to maintain surface water quality standards; Short-Term Exemption From Montana's Surface Water Quality Standards (3-A - Authorization). Low flows during drought make receiving waters more vulnerable to violations of water quality standards.

9) Improve monitoring and enforcement in administration of 3-A law. Educate conservation districts, irrigators, construction contractors, and others who have occasion to cause disturbances to streams of need to acquire 3-A permit.

10) Sponsor and encourage legislation that provides incentives for water conservation, i.e.municipal water rates should not provide a "quantity discount" that encourages higher use. Flat rates or rates that increase with volume of use control waste. Low flush toilets should be required by state building codes. These measures reduce the amount of wastewater treated and the contamination of surface water in periods of low flow.

11) Maintains and update list of educational materials that promote water conservation measures such as xeriscaping and installation of water-saving devices by homeowners. Xeriscaping means landscaping with less water-dependent plant species.

12) Continues to educate the general public on issues that affect water quality, such as non-point source pollution since low flows exacerbate impacts of drought on water quality.

Drought Responses
Alert

1) Monitors waters where discharges may cause impacts to aquatic life and take measures to mitigate damage. Report assessment and response action to DAC at meetings.

2) Monitors waters where discharges may cause impacts to beneficial uses of water and take action to prevent damage. Report assessment and response action to DAC at meetings.

3) Maintains updated drought information newsletter during periods of drought that describes status of conditions and identifies sources of state assistance to water suppliers, encourages local planning including watering restrictions and other conservation measures.

4) Promotes public awareness of water conservation methods during drought using PSAs and videos produced for television.

Severe Drought

1) If an MPDES permit falls into noncompliance, and as a result, public drinking water supply is at risk, issue boil orders and health advisories to the public. Report assessment and response immediately to DAC through chairperson and at meetings.

DEPARTMENT OF AGRICULTURE

Montana's agricultural sector suffers the greatest economic impact during drought. The Montana Department of Agriculture provides support to producers with direct access to sources of assistance during periods of drought, such as the "Hay Bank." Agriculture coordinates assistance programs with the federal government through the Department of Agriculture (USDA).

USDA is the primary source of financial assistance for producers suffering economic loss from the direct impacts of drought. **The Montana Drought Relief Assistance Reference Guide**, available upon request, summarizes the financial and technical assistance programs offered by state and federal government agencies for losses resulting from drought.

Ongoing Activities

1) Participates as a voting member of the DAC and on subcommittees thereof, as requested.

2) Generates the Crop-Weather Report, as a cooperator with the USDA, NWS, and Extension Service, which provides the state with weekly data on crop conditions, soil moisture, temperatures, and precipitation.

3) Maintains and improves the services offered by the Agriculture Electronic Bulletin Board to provide producers with regular and special informational needs.

4) Coordinates assessment and response activities with Department of Livestock and report findings and recommendations to DAC. Prepare regular assessments of impacts to agriculture from drought for the DAC and recommend mitigative responses.

5) Continues research and education in cooperation with state Extension Service regarding agricultural water conservation practices, and development of drought-resistant varieties of grain and feed.

6) Encourages irrigators to use available technology in their operations including "Agri-Met",the Northwest Cooperative Agricultural Weather Network system developed by U.S. Bureau of Reclamation and the Bonneville Power Administration, to conserve water and energy.

7) Works with USDA to develop a fire and insect program which includes Conservation Reserve Program (CRP) lands.

8) Coordinates fire management planning with DNRC for CRP lands.

9) Represents state agriculture and participate on subcommittees as assigned by the DAC Chairperson.

Drought Responses
Alert

1) Report to DAC assessment of potential for economic damage to major agricultural sectors given continuation of present conditions and outline mitigation strategy.

2) During drought, the electronic bulletin board (EBB) maintains a "Hay Bank" that compiles an updated list of potential buyers and sellers of feed. Load "Ag" file on EBB with mitigation strategies and sources of technical assistance.

3) In conjunction with state extension service, offers educational drought workshop for producers of crops impacted by drought.

Severe Drought

1) Continues to report assessment of impacts and status of mitigation response to DAC and load EBB with information on status of USDA Secretarial Natural Disaster Determination process and sources of financial assistance.

2) Facilitates the state's role in the USDA Secretarial Natural Disaster Determination process with DAC staff and DES by meeting with USDA officials as needed and responding to inquiries from citizens.

DEPARTMENT OF LIVESTOCK

The Department of Livestock works closely with the state Department of Agriculture to provide livestock producers with support during drought. The department's network of deputy state veterinarians, district brand inspectors, and deputy state stock inspectors provide a valuable source of information for assessment of drought impacts through their daily work and observations. Livestock's annex to this plan provides a comprehensive list of available services with phone numbers for assistance to producers during periods of drought.

Ongoing Activities

1) Participates as a voting member on the Drought Advisory Committee.

2) Encourages livestock producers to develop alternative water supplies. Work with local county soil conservation districts to enhance existing water supplies and find alternative sources.

3) Uses the Department of Livestock laboratory for analysis of water quality for livestock use and animal health.

4) Works with the Soil Conservation Districts to educate livestock producers on stream bank riparian protection to maintain water supplies.

Drought Responses
Alert

1) Works with Department of Agriculture concerning animal health concerns in moving livestock as outlined in the annex.

2) Increases predator control, especially where livestock has not been grazing and a high population of predators have been preying on wildlife, or where the normal prey of the predator has been reduced due to the drought.

3) Develops range information to accompany the "Hay Bank" hotline available through the state electronic bulletin board.

4) Through network of state veterinarians and brand inspectors, increases level of monitoring and feedback concerning conditions as drought worsens. Use video cameras to record range conditions for assessment and presentation to DAC.

5) Summarizes assessment of conditions and report mitigation strategy to DAC.

Emergency

1) Continue to report damage assessments to DAC and status of mitigation response efforts.

DEPARTMENT OF COMMERCE

As a voting member of the DAC, the Department of Commerce is informed of drought conditions on an ongoing basis. Commerce assesses the likelihood of impacts to tourism for regions of the state as conditions worsen. It can advise visitors and potential visitors of forest closures due to fire or fire danger and of limitations on river recreation due to low flows. In addition to providing drought impact information, Commerce provides information on alternative travel planning for visitors. Commerce also maintains economic statistics used to assess the impacts of drought.

Ongoing Activities

1) Participates as a voting member on the DAC and on subcommittees thereof, as requested.

2) Maintains current and historical data on the state's economy from the U.S. Department of Commerce to assess the impact of drought on the state.

3) Maintains the toll-free phone number at the Montana Tourism Promotion Division that provides information for out-of-state callers (800) - VISIT MT. Accurate information concerningthe extent of drought impacts, including forest closures due to fires, and streamflows, can address concerns of tourists and encourage visitation.

Drought Response
Alert and Severe Drought

1) Generates assessments on an ongoing basis of the impacts of drought on tourism, industry, and other monitored economic sectors and report findings with response strategy to DAC and tourism industry.

2) Apprises outfitters and guides of streamflow forecasts and back country fire conditions and restrictions through Board of Outfitters and Guides.

DEPARTMENT OF MILITARY AFFAIRS
DISASTER AND EMERGENCY SERVICES DIVISION

Disaster and Emergency Services (DES) is a voting member of the DAC. It is the state agency that specializes in disaster response and management. Although its expertise primarily addresses sudden catastrophic occurrences, DES assumes a lead role in DAC matters of official natural disaster determinations on the state and federal levels and in the coordination of federal assistance.

Ongoing Activity

1) Participates as a voting member on the DAC and serves on subcommittees, as designated by the chairperson of the DAC.

Drought Responses
Alert

1) Acts as liaison with local DES coordinators, before and after the formation of local drought advisory committees, to assess needs and provide support and information regarding federal programs.

2) Monitors progress of drought and identifies counties where impacts are most likely to occur. Directs information concerning sources of assistance to those counties.

Severe Drought

1) Assists the DAC in directing emergency or disaster program functions as authorized by the governor.

2) Assists the DNRC with providing information concerning the drought designation process to any agency or individual requesting assistance.

3) Drafts correspondence on the USDA Secretarial Natural Disaster Determination process for the governor and county commissioners.

4) Assists and coordinates damage assessment activities, as needed. This task generally involves compiling agricultural damage information which is part of the packet forwarded to the governor.

5) Coordinates the application process and implements procedures for drought declarations, assists in formulating any executive orders or proclamations, and acts as the liaison withother agencies and organizations in developing the drought declaration process.

MONTANA STATE LIBRARY
NATURAL RESOURCE INFORMATION SYSTEM (NRIS)

1) Produces map of state for Surface Water Supply Index (SWSI) using data generated by the NRCS. The SWSI map projects surface water supplies for more than 50 river basins statewide. It is used primarily to determine the availability of water for irrigated agriculture and instream flow. The DAC uses the SWSI in conjunction with the PDSI as a triggering mechanism for the activation of prescribed responses to drought conditions as they develop.

2) Produces map of state for the PDSI from data generated for over 130 geographic points statewide. The PDSI is used as an indicator of current soil moisture conditions for prairie or dryland farming. The PDSI is used in conjunction with the SWSI as a triggering mechanism for the activation of prescribed responses to drought conditions as they develop.

3) Loads state electronic bulletin board (EBB) NRIS section labeled "Drought" with PDSI and SWSI maps and other data provided by federal agencies that monitor conditions for the DAC. Loads and updates electronic bulletin board with state agency assessments of conditions and projections of impacts in their respective jurisdictions. Outside Helena: 1-800-462-1729 ; in Helena: 444-5648. Internet users can access drought data using the world-wide web viewer and address: http:/NRIS.MSL.MT.GOV

4) Develops new map products for use by the DAC in evaluating water supply and moisture conditions, such as the streamflow summary map which summarizes current USGS flow data and places it in the context of historical high, low, and average flows using hydrographs.

BUREAU OF MINES AND GEOLOGY
MONTANA SCHOOL OF MINERAL SCIENCE AND TECHNOLOGY

The Bureau of Mines and Geology supports the DAC's water supply monitoring activities through its statewide groundwater monitoring network. The network is used to determine general water use and water availability trends. The network will be used to monitor the effects of current and prolonged drought on aquifers. The data will identify aquifers particularly vulnerable to overdrafting during periods of drought and will be useful to determine the suitability of controlled groundwater district designation. Drought contingency planning for local water use could consider these data in regulating groundwater withdrawals.

Ongoing Activities

1) Serves as a member of the DAC in a data support capacity.

2) Monitors groundwater levels in aquifers statewide.

Drought Activity

1) Attends DAC monthly meetings and reports long and short-term changes in state's aquifers, by region, on a regular basis.

MONTANA STATE UNIVERSITY
STATE COOPERATIVE EXTENSION SERVICE

Through the state extension service, supplements, updates, and promotes educational and informational printed material on a variety of water conservation practices for agricultural and domestic users. Extension conducts research and development of agricultural methods on an ongoing basis on behalf of the state and its citizens.

Ongoing Activities

1) Conducts research and offers educational material for a variety of water conservation practices for agricultural and domestic users.

2) Conducts the "Grazing Initiative" program that includes strategies for grazing during periods of drought.

Drought Activity

1) With state Department of Agriculture, offers educational workshop for crop producers outlining strategies for coping with drought.

MONTANA CLIMATE CENTER

The state climate center at MSU collects soil moisture data from over 130 sites statewide for preparation of the PDSI map. The data are used by the Montana State Library's Natural Resource Information System to produce the color-coded PDSI map.

FEDERAL AGENCIES

Federal agencies provide several types of assistance to those adversely affected by drought. One type of assistance is access to the data agencies collect as part of their mission or mandate. The measurement, collection, and dissemination of hydrological and meteorological data forms the foundation of timely drought assessment. These data are used to assess and forecast water supply and moisture conditions. By comparing current with past data, planners and resource managers are better able to anticipate and plan for future drought impacts. Almost without exception, these services are provided on an ongoing basis.

Monetary and technical assistance are available for agricultural producers and business owners to mitigate losses related to drought. Technical assistance reduces the vulnerability of agricultural operations to drought. Some USDA assistance programs are ongoing and others require an official USDA Secretarial Natural Disaster Determination. The *Montana Drought Relief Assistance Reference Guide* lists federal and state assistance programs with brief descriptions of program benefits and eligibility requirements. The Guide is updated periodically and is available upon request.

BUREAU OF RECLAMATION
(U.S. Department of the Interior)

The mission of the Bureau of Reclamation (Reclamation) is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. Reclamation operates and maintains 13 major water storage reservoirs in the state. These projects provide water supplies for agricultural, municipal, industrial, and domestic uses. Hydropower, flood control, recreation, fish and wildlife protection, and navigation are additional benefits provided by Reclamation projects. Reclamation has developed new strategies to respond to society's increased emphasis on the protection of the west's natural resources. Reclamation's toll-free phone number for information regarding reservoir operations is 1-800-775-0868.

Ongoing Activities

1) In concert with states, tribes, water users, and others, develops staged drought management contingency plans and implements effective drought management measures and activities.

2) Works with other federal, state, and local agencies to enhance data collection and water supply forecasting capability to improve both water supply prediction and operational effectiveness.

3) Reviews operating criteria, strategies, and plans for Reclamation projects to determine if changes would make projects more effective in mitigating drought impacts.

4) Modifies project operations to minimize drought-related impacts. This includes operations that enhance water delivery to contractors but may also include actions to protect fish, wildlife, recreation, and other values.

5) Announces annual operating plans for project reservoirs based on established planning criteria. Seeks input from the public other parties such as marina and fishery managers to formulate plans.

6) Offers programs that assist irrigation districts in securing adequate supplies of water and installing facilities for water delivery and distribution.

7) Monitors and reports water supply conditions of Bureau of Reclamation projects.

8) Projects future water supplies based on indications such as mountain snowpack and irrigation water demand.

9) Coordinates project operations with the Bureau of Indian Affairs (BIA), irrigation districts, and other operators of diversion facilities. Reclamation meets with water managers to present water supply information, develop short-term operating plans, and suggest methods to extend available water supply.

10) Assesses the need for changes in policy to better accommodate drought problems and solutions.

11) Provides the public with informational and educational materials regarding water conservation. This includes water supply and forecast information for use by state and other federal agencies for drought assessment and management decision-making.

Drought Responses

1) Provides information and technical assistance on drought conditions and management programs and techniques to other federal and state agencies, tribes, water user organizations, and local entities.

2) Implements programs authorized and funded by Congress through emergency legislation. These programs include grants and loans for water-related projectsthat reduce the impacts of drought. These projects are coordinated with state, federal, and local authorities, and with water user organizations.

3) Evaluates drought-related conditions on all Reclamation projects and identifies recommended relief measures. Any time water supplies fail to allow an adequate supply, Reclamation seeks to identify, with its contractors, methods to extend the available water supply to reduce adverse economic impacts.

GEOLOGICAL SURVEY
(U.S. Department of the Interior)

The U.S. Geological Survey (USGS) supports the DAC with streamflow monitoring data on a continual basis. It also provides the DAC with monitoring data on groundwater levels. These data are used as an indicator of current and future surface water supplies. USGS operates a streamflow network of automated, real-time gauging stations that indicate natural streamflows, as well as streamflows influenced by irrigation and reservoir storage. These data provide the DAC with information useful in assessing future drought impacts. Internet system users can now access real-time streamflow data and historical data for a number of Montana rivers using the USGS home page. To access USGS real-time and historic streamflow data on the Internet world-wide web use the following address: http://wwwdmthln. cr.usgs.gov/. Historic streamflow data is available by county or by river basin.

Ongoing Activities

1) Measures and records streamflow data for most of the major rivers and streams of the state.

2) Compares current streamflow data with historical data to evaluate current conditions.

3) Conducts surface water investigations, primarily as a cooperator with state and local agencies on water supply projects. Determines water supply quality and evaluates hazardous conditions.

4) Maintains a data base of streamflow data on a real-time basis at the local level.

5) Conducts research on hydrologic processes and the effects of climate change.

Drought Response

Install and monitor streamflow gauges on river reaches of special concern during drought.

BUREAU OF LAND MANAGEMENT
(U.S. Department of the Interior)

Ongoing Activities

1) BLM manages public lands, including the authorization of livestock grazing, under the principles of multiple use and sustained yield; provides for the orderly administration of grazing by domestic livestock; and provides for the conservation and protection of rangeland soil and vegetation resources.

2) Maintains network of RAWS/ONMI soil moisture monitoring stations used in assessment of range conditions. Reports soil moisture levels to state DAC on a regular basis to supplement other sources of soil moisture assessment information.

Drought Responses

1) Manages range depletion during periods of drought by modifying grazing schedules and livestock management practices on BLM leased lands. This requires an increased level of coordination and consultation between livestock operators and BLM personnel.

2) Encourages voluntary adjustments in livestock use on public lands as it becomes apparent that normal grazing schedules under existing drought conditions would result in degradation of long-term resource productivity.

3) Where it is apparent that resource degradation may occur if drought continues, notifies livestock operators, through letters and news releases, that livestock grazing allotments may be reduced in the coming season.

4) Schedules range user meetings in affected communities to discuss possible actions to prevent range resource damage.

5) Develops strategies with livestock operators to minimize impacts to rangeland during and following drought.

6) Implements the procedure specified by federal statute 43 CFR 4160 if conditions warrant issuance of grazing restrictions. This procedure calls for a "proposed decision" made by the area manager and based upon an assessment of conditions of the subject allotment. Following a 15-day period for permittee protest, a final decision is rendered by the authorized officer. The permittee may appeal this decision.

NATIONAL WEATHER SERVICE
(U.S. Department of Commerce)

Ongoing Activities

1) Provides data support to the DAC as a non-voting member.

2) Produces hydrologic forecasts, including water supply forecasts for the state. Cooperates with the NRCS in the determination and production of water supply forecasts.

3) Produces short-term weather forecasts for the state. Longer range forecasts (6 to 10, 30 day, and 90 day) are produced by the Weather Service in Washington, D.C.

4) Collects and maintains meteorological records for weather stations around the state, including precipitation and temperature data. Produces reports that summarize state meteorological data.

5) Conducts climate analyses and produces weekly Palmer Drought Severity Index values and Crop Moisture Index values for seven regions of the state.

6) Maintains a phone service at the Climate Analysis Center in Maryland that includes databases where climate information can be accessed by the public.

NATURAL RESOURCE CONSERVATION SERVICE
(U.S. Department of Agriculture)

Ongoing Activities

1) Maintains remote SNOTEL system of automated telemetry sites which record and relay snowfall depth and snow water content information. Fully-automated sites provide "real time," data for users of the computer system operated by West National Technical Center in Portland, Oregon.

2) Reports SNOTEL Snow Precipitation Update mountain precipitation and snowpack information to DAC on a regular basis and provides comparisons to historical data.

3) Prepares monthly Surface Water Supply Index (SWSI) values for over 50 Montana river basins. SWSI is used by the DAC as an indicator of short-term (1 to 6 months) surface water supplies. See "Drought Monitoring" section of this plan for an explanation of SWSI. The SWSI indices are mapped by the state library using GIS and are part of the DNRC's monthly Water Supply and Moisture Report.

4) Produces the Montana Basin Outlook Report on a monthly basis which provides projected streamflow probabilities of major rivers and their tributaries for the coming month based on mountain snowpack and precipitation data from SNOTEL sites.

5) Monitors soil moisture conditions to determine water availability for plants.

6) Provides technical assistance to the agricultural community on matters such as farm conservation practices, water conservation, water quality improvement, and diversion of irrigation water.

CONSOLIDATED FARM SERVICE AGENCY
(U.S. Department of Agriculture)

Ongoing Activity

1) Provides ongoing agricultural programs to enhance water quality, improve water use efficiency, protect and preserve wetlands, and manage watersheds.

2) Offers direct and guaranteed loan programs as well as grants to the agricultural and business communities to increase economic opportunities, improve farming conditions, reduce pollution, improve community infrastructure, and provide disaster relief.

Drought Responses

1) Provides emergency grant programs during periods of drought to eligible producers suffering losses from natural disasters.

2) Provides guaranteed and insured loans to assist family farmers, ranchers, and aquaculture operators in recovering from losses resulting from natural disasters such as drought.

3) Serves as the chair of the State Emergency Board which reviews damage assessment reports prepared by local emergency boards. These reports are used in the determination of drought disaster status by the Secretary of Agriculture.

FEDERAL CROP INSURANCE CORPORATION

Provides insurance to farm owners and operators against unavoidable losses resulting from adverse conditions beyond the producers' control.

ARMY CORPS OF ENGINEERS
(U.S. Department of Defense)

Ongoing Activities

1) The Corps' responsibilities in water supply issues are primarily limited to hydropower production and flood control. Related issues in the operation of dams require the Corps to participate in other water management decisions.

2) Operates Fort Peck Dam and Reservoir on the Missouri River in northeast Montana and Libby Dam and its impoundment, Lake Koocanusa, on the Columbia River system in northwest Montana.

3) Operates federal reservoirs controlling releases of stored water for project purposes in periods of surplus runoff.

4) Prepares the Missouri River Annual Operating Plan and amends the Missouri River Master Manual, as needed, to improve the operation of all Corps projects on the Missouri River.

5) Controls navigation along the Missouri River by maintaining a navigable river channel for barge traffic, even at very low streamflows. This is facilitated through adjustments to upstream reservoir releases.

6) Administers the "404 Permit" section of the Federal Clean Water Act. The act applies to any person, agency, or entity, public or private, proposing a project that will result in the discharge of dredged or placement of fill material into waters of the United States. Applications are reviewed by the Corps prior to issuance of a permit.

7) Administers the Federal Rivers and Harbors Act which regulates any construction activity in or near, or alteration of any navigable water of the United States. Navigable waters in Montana are the Missouri River from Three Forks downstream to the Montana-North Dakota border, the Yellowstone River from Emigrant to its confluence with the Missouri River, and the Kootenai River from the Canadian border downstream to Jennings, Montana.

8) Conducts regional meetings to gather public comment and respond to local concerns and problems related to Corps projects, such as flat water recreation during periods of drought.

9) Controls river flows on the Missouri River system to meet requirements of municipal water supplies, hydropower production, recreation, endangered species, and irrigation in downstream states.

Drought Response

1) Constructs wells and transports water to farmers, ranchers, and political subdivisions within areas determined to be drought-distressed by the Chief of Engineers. Before Corps assistance is considered, other applicable federal assistance authorities must be evaluated. The authority for these actions is the Corps' responsibility under Public Law 84-99.

FEDERAL EMERGENCY MANAGEMENT AGENCY

Ongoing Activity

1) Provides grants to states for the suppression of forest and grassland fires.

Drought Responses

1) Provides disaster assistance to states, local governments, and nonprofit organizations when the President declares an emergency.

2) Provides disaster assistance including unemployment insurance, temporary housing, and crisis counseling to individuals and families adversely affected by disasters or emergencies.

SMALL BUSINESS ADMINISTRATION

Ongoing Activity

1) Provides advisory services, counseling, technical assistance and training to independently owned business to help improve management skills.

Drought Response

1) Administers the economic injury loan program for small businesses, including agricultural cooperatives, adversely affected by community agricultural losses. Businesses that depend on the business of agricultural producers affected by drought are eligible if an SBA disaster declaration is in effect in the state.

LOCAL ORGANIZATIONS

COOPERATIVE EXTENSION SERVICE

Ongoing Activities

1) Develops and disseminates drought-related agricultural and domestic information to established information networks.

2) Assesses availability of funds for long-term drought mitigation measures such as irrigation scheduling and other operation efficiency improvements.

3) Provides technical assistance to the agricultural community on how best to cope with drought conditions.

4) Conducts research into methods, practices, and crop species that might minimize impacts of droughts and disseminates the information as it is developed.

Drought Activity

1) Offers drought mitigation workshops with the state Department of Agriculture to provide crop producers with the latest information pertaining to their needs during drought.

COUNTY DISASTER AND EMERGENCY SERVICES

Ongoing Activities

1) Monitors local businesses, industries, and individuals to assess drought-related impacts.

2) Receives "flash reports" of agricultural difficulties from county emergency boards.

3) Gathers information on local drought-related needs.

4) Participates in the organization and activities of a local drought advisory committee.

5) Develops public service announcements for local broadcast concerning availability of assistance, water conservation measures, and meetings of local drought committees.

6) If necessary, prepares resolution or ordinance proclaiming local state of emergency to authorize emergency expenditures. Forwards the proclamation to state Disaster and Emergency Services (DES).

7) If necessary, assists officials in evaluating and verifying need for assistance from the U.S. Army Corps of Engineers.

COUNTY FOOD AND AGRICULTURAL COMMITTEE
(Emergency Board or FAC)

Drought Responses

1) Monitors local businesses, industries, and producers to assess drought-related impacts and record findings.

2) Prepares damage assessment reports detailing extent and nature of drought impacts and submits them to the local emergency management agency and the state emergency board. (The state board reports to the governor and forwards data to the Secretary of Agriculture.)

LOCAL DROUGHT ADVISORY COMMITTEES

LDACs assume a key role in mitigation of drought impacts. Over 30 counties have convened committees to exchange information and plan responses to drought. An ideal LDAC includes participants from a wide variety of backgrounds and professions. LDAC's should initiate activity early enough to anticipate and respond to drought before economic and resource damage occurs.

LDACs serve as linkage for exchange of information between the DAC and counties. Some counties have monthly LDAC meetings starting in early spring to monitor and report local conditions. In most cases, LDACs meet if drought is imminent or ongoing. The Appendix contains a local drought operations manual for organization of local drought management efforts.

Drought Responses
Alert

1) Convene drought-affected groups and individuals to identify and discuss the nature and extent of local drought impacts.

2) Refer to local drought operations manual (see Appendix) for direction and ideas for local drought management strategies.

3) Disseminate information gathered by state agencies concerning conditions and forecasts and availability of assistance to the locality.

4) Develop strategies to address local drought impacts using local resources and expertise. For example, local federal agency offices, such as NRCS, offer technical assistance for water delivery efficiency of agricultural operations.

5) Communicate local conditions and needs to the DAC to reconcile data gathered by state and federal agencies.

Severe Drought

1) Report impact assessments to county commissioners and the DAC. If conditions warrant, the commissioners will forward a request to the governor to initiate the natural disaster determination process (flow chart of process is included in Appendix E).

CITY/COUNTY PLANNING OFFICES

Ongoing Activities

1) County sanitarians administer septic system regulations which apply to anyone proposing to construct, alter, extend, or operate a sewage treatment and disposal system. Conventional systems must be at least 100 feet from the 100-year floodplain and 6 feet from groundwater. Alternative designs that are 4 to 6 feet from groundwater must be approved.

2) Administer Lakeshore Protection Act which applies to all private individuals and government entities proposing to do work in or near a body of water within a county's jurisdictional area.

3) Promote the practice of xeriscaping by recommending drought-resistant plant and tree varieties for landscaping requirements of local zoning ordinances.

4) Assist in the drafting and implementation of local water conservation ordinances.

APPENDIX A

STATE AGENCY ANNEXES

to the

MONTANA DROUGHT RESPONSE PLAN

OFFICE OF THE GOVERNOR

The Office of the Governor has a variety of responsibilities under the state drought plan. These responsibilities can be divided into three functional areas: disaster designation, activation of the Montana Drought Advisory Committee, (DAC) and public information. Each of these areas represent an essential role in the successful implementation of the state drought plan.

DAC Activation

At the request of the governor, the DAC becomes active. Activation corresponds with the requirements of state statute requiring the DAC to meet at least in February and October of each year to monitor and assess conditions that indicate the presence or probability of drought. The DAC is chaired by a representative of the governor. With the assistance of the staff, the chairperson sets meeting times, location, agendas, and requests reports and data from member and supporting agencies and individuals.

The governor's representative decides, based on quantitative information supplied by DAC state, tribal, and federal agencies, when to hold meetings between February and October. The chairperson reports to the governor on DAC matters and makes recommendations for official action. The governor evaluates the recommendations of the DAC and resolves questions of potential conflict among the DAC members and interests represented on the committee to ensure a coordinated response to drought.

Disaster Designation

County commissioners are responsible for requesting the governor to initiate the Secretarial Natural Disaster Determination process with the Secretary of Agriculture. The Governor's Office works closely, through DES, with the USDA to coordinate the process. After damage assessment information has been gathered at the county level, it is submitted to the State Emergency Board for review. The information is then passed on to the governor.

The governor acts on behalf of the affected counties by submitting a drought declaration request, through DES, to the Secretary of Agriculture. The Secretary then notifies the governor of his/her determination and the governor notifies the affected counties of the process outcome. Natural Disaster Determination by the Secretary of Agriculture triggers assistance under the Small Business Administration Economic Injury Loan Program, the CFSA Emergency Loan Program, and certain Internal Revenue Service tax considerations (see Appendix D for flowchart of process).

Public Information

The governor's office plays a major role in communicating with and leading the people of the state during drought. This role includes coordinating information releases by other state agencies, issuing major policy statements on the status of drought in the state, producing and distributing public service announcements on water conservation and drought awareness, and issuing executive orders.

DEPARTMENT OF ENVIRONMENTAL QUALITY

Introduction

Drought conditions can have a significant impact on water resources in Montana. Drought may make it difficult for municipalities and individuals to obtain sufficient amounts of potable water, resulting in significant impacts on public health. Increasing withdrawals from surface sources to satisfy demands for domestic, irrigation and industrial water users may damage or destroy aquatic life. In addition, continued discharge of wastes at low stream flows can damage aquatic resources and threaten public health. For these reasons, the Department of Environmental Quality (DEQ) plays a role in water management during droughts in Montana. The following information summarizes these responsibilities.

Private and Public Water Supplies

Private water supplies

Drought impacts

Properly constructed private water supplies are unlikely to be affected by drought conditions. Unfortunately, many private water systems are not properly constructed and rely on surface supplies such as "pipe in the lake" systems. Some private systems rely on springs, or shallow aquifers that may be affected by drought.

Affected supplies

DEQcan only respond to private water supply problems if reported by affected parties.

Department responses

Owners of private water supplies will usually be responsible for securing alternate sources of water during drought conditions. Information about the sanitary protection of potable water will be provided to individuals upon request and to the public through news releases.

Public Water Supplies

Drought impacts

The impact of a drought on public water supplies is, to some degree, dependent on the source of supply. Supplies fed by small surface sources or groundwater derived from such sources are most vulnerable to drought.

Supplies likely to be affected

DEQ can determine which supplies in an area are most susceptible to impairment. Information on these supplies is kept on file and is available for approximately 720 community systems in Montana. The systems are classified according to sources of water for surface water systems, groundwater systems and those which use both surface and groundwater.

Capability of system to withstand drought

Surface Water Systems

Information concerning surface water flows and reservoir water levels is obtained from the USGS, DNRC, DFWP, public water supply systems, and DEQ records and experience. This information is used to determine which systems will be most affected by drought.

Groundwater Systems

Communities with groundwater systems are encouraged to monitor levels as much as possible to determine if they are declining. DEQ obtains information on groundwater levels from the USGS, the Montana Bureau of Mines and Geology, and groundwater users.

Systems that are susceptible to drought are studied to determine their ability to withstand drought conditions. Assessments include information about alternate water sources for the system, the possibility of implementing water use restrictions, and potential health impacts of water shortages.

Department response

Cooperative response

DEQ works with public water supplies, local health departments and other agencies to minimize the impact of drought on public health and will cooperate to ensure the provision of potable water to the citizens of affected areas.

Services available from DEQ include:

- Information on water conservation techniques to make the best use of a limited resource
- Advice on the use of alternate sources and options for obtaining additional water
- Treatment options to ensure safe water
- Preparing and releasing news releases for the press
- Cooperative efforts with funding agencies to find financing for emergency and/or long term solutions
- When necessary DEQ and DES can use the state's emergency water disinfection and filtration units to provide a temporary source of potable water.

Legal responsibility

If an imminent threat to public health exists, DEQ may require a public water supply system to take special measures to protect the health of its citizens (ARM 16.20.277). Those measures most often include the implementation of strict water use restrictions to maintain positive pressure in the distribution system and the provision of adequate water for domestic uses. Where contamination is a risk, boil orders or health advisories may be issued.

Permitted Waste Water Discharges

Drought impacts

Montana Pollution Discharge and Elimination System (MPDES) permits specify the conditions under which point sources, (i.e. industries or municipal wastewater treatment plants), may legally discharge pollutants to state waters. Permit limits are calculated to prevent impacts to beneficial uses of water.

A treatment plant is designed so permit limits can be achieved at any flow more than a specified value. This flow value is calculated from historical stream flow data and is the minimum flow that can be expected to occur for seven consecutive days once during any ten-year period (7Q 10) ARM 16.20.631(4). Thus, at any flow greater than the 7Q 10, the limits will ensure that instream standards and beneficial uses are protected. If stream flow drops below the 7Q 10, however, the permit no longer ensures that instream beneficial uses will be protected, and the permittee is **not** required to further treat the discharge. The greater percentage of wastes in the stream due to decreased flow and relatively constant discharge of wastes stresses aquatic life. Under these circumstances aquatic life and domestic and recreational water uses are affected.

Affected uses

When drought conditions emerge, DEQ will search its permit files to determine which discharges in a drought area may affect beneficial uses. This information will be used to direct departmental responses. The affected public and downstream users will be notified of any hazards during the drought.

General Impacts of Drought

Drought Impacts to Aquatic Life

Increased withdrawals of water during droughts subject aquatic life to decreased flows and water levels. This results in increased temperatures and decreased habitat which place unusual stress on aquatic populations. In addition, drought conditions increase the concentration of sediment and pesticides from irrigation runoff in low-water streams. Both of these pollutants can seriously damage aquatic ecosystems.

Other Impacts

Evaporation of surface water increases salinity in saline seeps and subsequently, in groundwater and runoff to surface waters. Also, toxic blue-green algae growth in reservoirs can result from decreased water levels, increased water temperatures and higher concentrations of nutrients, making reservoir management even more critical during drought periods.

Department Response

Aquatic populations affected by drought are normally in the jurisdiction of the Department of Fish, Wildlife and Parks. Toxic blue-green algae blooms are the responsibility of DEQ, which will issue press releases to inform the public of potential algae problems.

Department Contacts

Listed below are names and phone numbers of staff with drought responsibilities for the Department of Environmental Quality:

Response Area	Phone
Public Water Supply	444-4549
Surface Water Quality (algae blooms, etc.)	444-2406
Groundwater Quality	444-2406
Waste discharges	444-2406

Energy Production

The Montana Energy Emergency Contingency Plan was prepared by the Energy Division in 1989 to address energy shortages during emergencies, including a shortage of hydroelectric energy resulting from drought. The plan prescribes actions and measures to be taken in phased responses corresponding to the severity of a shortage. The western portion of the state is more dependent on hydroelectric generation than the eastern portion, which depends primarily on thermal power generation. When mountain snowpack levels indicate that low streamflows in coming months may threaten regional electricity supplies, states of the Pacific Northwest coordinate planning efforts to cope with the situation. Contingency plans mandate actions varying from voluntary conservation to mandatory curtailment measures that governors can order under the Energy Supply Emergency Powers Act. Copies of the plans are available from the Energy Division of DEQ.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

INTRODUCTION

The Department of Natural Resources and Conservation (DNRC) performs two distinct functions in its role as a member of the DAC. First, there are the responsibilities that DNRC assumes as a voting member of the committee, including the technical support it provides. Second, there are responsibilities DNRC has as staff to the DAC.

AGENCY RESPONSIBILITIES

DNRC is the lead state agency concerning issues of water quantity and allocation. The authority for this responsibility is based on state law. During drought, the following elements of DNRC jurisdiction are affected in some manner.

WATER STORAGE

DNRC oversees the maintenance, management and construction of state-owned reservoirs. The primary purpose of these reservoirs is to supply water to water user associations for irrigation. Some projects have additional uses, such as recreation or power generation. DNRC is responsible for developing and implementing drought contingency plans for state-owned reservoirs.

WATER RIGHTS

DNRC is charged with recording and issuing permits for water rights. During periods of drought, inquiries concerning water rights increase, as well as conflicts regarding the allocation of water.

Resolution of conflict concerning water rights

DNRC has developed an official policy for resolving disputes among water users. The policy calls for informal means of dispute resolution to be employed before resorting to legal courses of action. In cases where a water right violation is observed by DNRC and negotiation is unsuccessful, DNRC can impose monetary penalties as provided by the 1991 Montana Legislature. In instances where an alleged water right violation is clearly resulting in immediate and serious injury, a field investigation will be conducted and a report made. Agency legal action will follow. A copy of the dispute resolution and enforcement procedure is included in the Appendix .

Water measurement

Section 85-2-150 MCA (1991) - Chronically dewatered watercourse, identification, created the Water Measurement Program. The statute provides guidelines for DNRC to designate streams and rivers as chronically dewatered watercourses and provides criteria for DNRC, in consultation with other agencies and groups, to consider in the installation of measuring devices on these watercourses. Measurement must likely contribute significantly to solving the dewatering or resolving conflicts among water right holders.

Official declarations

DNRC's efforts can be concentrated on meeting the emergency if the governor officially declares a temporary emergency or drought disaster. Such an official action suspends the processing of applications for new water uses until such time as the status is lifted, enabling DNRC to focus on resolving conflict over water allocation and answering water rights inquiries.

FINANCIAL ASSISTANCE

Renewable Resource Grant and Loan Program

DNRC administers the state's Renewable Resource Grant and Loan Program which provides funding for state and local governmental entities and private parties to promote and advance the beneficial use of water and other renewable natural resources. The legislative intent of the water development program is to allow the citizens of Montana to achieve full use of the state's water. Grants and loans are provided for projects that promote the development and efficient use of water.

DNRC's role in this process is to screen applications to determine whether project proposals are financially and technically feasible and rank the applications according to established criteria. The legislature makes the final decision on grant applications. Project proposals must be well documented and clearly meet the criteria and objectives of the program to be recommended for funding. Examples of projects that have received funding in the past include groundwater protection, improvements in irrigation efficiency, water-based recreation development, and water storage.

Funds from this source have been used for a wide variety of activities, including establishment of a statewide drought monitoring system to enhance the state's ability to respond to drought, lining of irrigation ditches to reduce water loss and improve water delivery efficiency, enhancement of instream flows through improved efficiency of agricultural water use, improvement of irrigation efficiency and other on-farm water management skills, and other measures that provide direct benefits during periods of drought.

Environmental Contingency Account

Limited funding is available for emergency projects to help solve immediate water-related problems faced by state and local governments. These funds are reserved for water development projects that, if delayed until legislative approval can be obtained, will cause substantial damage or a legal liability to the project sponsor. Emergency funds must be used to rectify an existing problem and will not be appropriated for preliminary studies or activities. In September 1994 use of the fund was authorized by the governor for a project to augment flows on the Upper Big Hole River.

REGIONAL FIELD OFFICE SERVICES

DNRC's eight regional offices play a significant role in the state's drought response. Regional offices provide information on water rights, water supply and soil moisture, and sources of water measurement assistance. Regional Office personnel participate in local drought committee meeting and provide information to the committee regarding District programs.

CONSERVATION DISTRICT SUPPORT

DNRC provides administrative, legal and technical support for the state's 59 conservation districts (CDs). DNRC offers advice and planning assistance to CDs in finding solutions to local wind and water erosion, surface and groundwater pollution, and administration of the Montana Natural Streambed and Land Preservation (310) Act. County CDs are a unit of state government, governed by a locally elected board of supervisors, who give their time and expertise voluntarily. The Montana Conservation District Law requires the districts to carry out the provisions of the Federal Clean Water Act (208), in cooperation with the Montana DEQ, and the Resource Conservation Act in cooperation with the NRCS, in addition to administering the "310" law. DNRC's eight regional offices provide technical and informational support for CDs on a localized basis.

"310" Act

All 310 permit projects must be constructed in accordance with USDA, (NRCS) practice standards and specifications for conservation practices requiring engineering services in Montana. Technical assistance for the design of irrigation diversions is available from the NRCS, which supports CD boards on a local basis. When application is made for a 310 permit, an inspection team comprised of a CD representative, DFWP, and the applicant visit the site of the proposed activity. The DFWP official may suggest methods to implement the project in a manner that protects the fishery from the impacts of disturbance and sedimentation. These design considerations are intended to mitigate damage to the fishery during periods of low flow.

DNRC holds workshops to help CD supervisors administer the "310" streambed law, which requires a person to obtain a permit before engaging in any activity that will modify a stream, its bed, or immediate banks (see Appendix). During drought, irrigators often need to change the point of diversion of water from a stream. The permit process provides the land user with helpful technical advice through an on-site consultation with representatives of the CD and DFWP.

Grant and Loan Program

CDs are eligible to apply to DNRC's Water Development Program for funding to improve the efficiency of existing irrigation projects. Projects that result in significant conservation of water or improve the efficiency of agricultural water conveyance systems receive funding priority. CDs have authority to request that county commissioners levy taxes on real property within the district to fund special projects. Conservation districts receive assistance from DNRC in the preparation of applications for water reservations to ensure an adequate supply of water for future urban and rural development.

Education

Education has been identified as the most effective long-range strategy for promoting water conservation. CDs initiate and support education programs for teachers and students by providing speakers and materials for the classroom. A scholarship program provides access for youth to natural resource camps. Adult education is offered through demonstrations, tours, and workshops on irrigation and riparian management, both areas of concern during drought.

Rangeland Program

DNRC has delegated the administration of the Rangeland Resource Program to its Conservation District Bureau which works with the CDs to comply with legislation mandating the maintenance and enhancement of the state's rangeland. Each CD provides technical and financial support for rangeland activities. This includes protecting rangeland from the impacts of overgrazing during drought.

Data Collection

DNRC generates the Soil Moisture and Water Supply Report on a monthly basis, February through September, and distributes it to nearly 200 recipients statewide including resource managers, scientists, interested individuals, and DAC members. The report combines data collected by the USGS, NWS, Reclamation, NRCS, DNRC, Montana Climate Center, and the Montana State Library. The report is the primary tool used by the DAC to identify the onset and location of drought and the severity of conditions. The state library's NRIS generates color-coded maps of the PDSI and the SWSI, the two primary indicators used by the DAC to evaluate conditions and plan responses. For more detailed description of the report and its role in drought management, refer to the section on Reporting Conditions in this plan.

DNRC RESPONSIBILITIES

Section 2-15-3308 MCA (1991) established the DAC and delegated staff duties to DNRC. Staff provides administrative support to the chairperson and the DAC. The following responsibilities, enumerated in the DAC statute, are essentially delegated to DNRC:

a) With the approval of the governor, develops and implements a state drought plan;

The staff is responsible for coordinating the components of the state drought plan. This includes development of sections concerning guiding philosophy, plan execution, and response coordination.

b) Reviews and reports drought monitoring information to the public;

Staff collects and organizes data from state and federal agencies and is prepared to answer questions or direct inquiries from the public and press to the appropriate agency or authority. Staff issues press releases through the DNRC public relations office or the governor's office concerning drought-related issues of public concern. The DNRC Water Supply and Moisture Condition Report is available at designated state library repositories in major Montana cities and on the state electronic bulletin board.

c) Coordinates timely drought impact assessments;

Staff consults with state and federal agencies concerning changes in drought conditions by assessing the monitoring information and preparing the material for presentation to the DAC for evaluation and decision-making.

d) Identifies areas of the state with a high probability of drought and targets reporting and assistance efforts to those areas;

By reviewing and assessing the reports of the monitoring agencies, the geographical areas of the state with the highest tendency or potential for severe drought can be identified. These areas are then targeted for increased levels of monitoring, assessment, and mitigation assistance.

e) Upon request, assists in organizing local drought advisory committees for the areas identified under subsection (3)(d).

To the extent that DNRC's budget permits, staff will travel to areas of worsening drought conditions to assist in the formation of local drought advisory committees(LDAC). Where LDACs have been formed in previous years, staff will contact the committee chairpersons to recommend reconvening and offer assistance.

f) Requests state agency staff to provide technical assistance to LDAC's;

When LDACs identify particular drought-related problems, the staff will contact the appropriate state and federal agencies to enlist the expertise necessary to address the problem.

g) Promotes ideas and activities for groups and individuals that may reduce drought vulnerability.

The staff is responsible for identifying and implementing long-range educational and operational options designed to reduce vulnerability of communities and economic sectors to the effects of drought.

Subsection (5) states:

The drought advisory committee shall meet, at a minimum, on or around the 15th day of October and February of each year to assess moisture conditions and, as appropriate, begin preparations for drought mitigation.

Subsection (6) states:

By March 15th of each year, the drought advisory committee shall submit a report to the governor describing the potential for drought in the coming year. If the potential for drought merits additional activity by the DAC, the report must also describe:

a) activities to be taken by the DAC for informing the public about the potential for drought;

Staff is responsible for making recommendations to the DAC, after consulting with agency personnel, for dissemination of information concerning potential drought effects to public health, safety, and welfare.

b) a schedule for completing activities;

If conditions warrant, the report to the governor must include a schedule for the completion of activities designed to address current drought effects.

c) geographic areas for which the creation of LDAC's will be suggested to local governments and citizens;

Staff will consult with reporting agency personnel and the DAC to determine whether conditions warrant the formation or reconvening of LDACs.

d) requests for the use of any available state resources that may be necessary to prevent or minimize drought impacts.

Staff will direct requests from LDACs to the appropriate state agencies to secure resources needed for the mitigation of drought effects on the local level. In addition to the duties specified in the statute, staff is responsible for:

1) Scheduling drought committee meetings;
2) Coordinating data;
3) Coordinating drought assessment activities;
4) Coordinating mitigation response activities;
5) Updating the state drought plan as needed;
6) Preparing press releases;
7) Responding to inquiries for information on water supply conditions, DAC activities, county and state disaster designation, water conservation;
8) Preparing the Report to the Governor Describing the Potential for Drought in the state for the coming year;
9) Coordinating public service announcements with state agencies;

10) Briefing the DAC on status of drought and response activities;

11) Preparing and delivering presentations to legislative committees such as the Legislative Water Policy Committee;

12) Coordinating, with the assistance of DES, the dissemination of information concerning the status of a USDA Secretarial Natural Disaster Determination;

13) Coordinating the education component of the drought management plan with the various contributing agencies;

14) Receiving information and requests for assistance from LDACs and reporting information to DAC;

15) Providing LDACs with guides to state and federal sources of technical and financial assistance;

16) Assist LDACs in organizing local responses to drought by arranging technical or financial assistance from the state.

DNRC POLICY FOR RESOLUTION OF WATER USE CONFLICTS AND WATER RIGHTS ENFORCEMENT PROCEDURE

Some of the most controversial drought issues surround the appropriation of water from Montana's streams, lakes, and reservoirs. In the past, DNRC addressed conflicts with a case by case approach, using personnel from the regional offices with support of the Water Rights Bureau. In response to an increase in complaints and inquiries, particularly during drought, DNRC developed and adopted a policy for responding to complaints and a procedure for enforcement of water rights (See Appendix D).

State Lands

Drought conditions have a major impact on DNRC activities and responsibilities. Extended periods of drying increase the importance of DNRC's wildland fire suppression responsibilities on the state, private, and federal land it is responsible for protecting. Drought conditions also significantly affect the revenue DNRC may receive from the 5 million acres of state-owned land it manages.

DROUGHT ASSESSMENT SYSTEM

DNRC's drought assessment responsibilities are mainly oriented toward the prevention and suppression of wildland fires. Specifically, the drought plan requires DNRC to identify areas of extreme fire danger due to drought conditions and provide continual assessments of the capabilities, resources, and sources of assistance available both within and outside the agency.

A. WILDLAND FIRE DANGER

All state and federal wildland firefighting organizations use the National Fire Danger Rating System to assess and monitor the conditions contributing to extreme fire danger throughout the State. The fire danger rating system is composed of several indexes which describe among other things, the probability of a fire start, the expected intensity of BTU's on the fire, and the difficulty to be expected in the control of the fire.

During the fire season, these indices are derived and updated daily from current weather and fuel moisture information gathered at over 90 reporting stations in Montana. Reporting stations enter local information into a fire computer system that provides DNRC with current fire danger information in almost any location in the state. This information, coupled with two daily fire weather forecasts from the National Weather Service, provides DNRC with the information necessary to plan and react to wildfire occurrences.

Besides monitoring conditions that contribute to fire occurrences, the DNRC monitors the availability and use of personnel and equipment within DNRC and other wildland firefighting organizations. During the fire season, a daily situation report on the use and availability of all firefighting equipment and personnel is summarized and provided to all wildland firefighting organizations.

DNRC's Fire Coordination Center in Missoula is its primary source and coordinator of fire planning and suppression. DNRC's field offices also can provide specific fire information on a regional basis. A list of the DNRC offices and phone numbers are attached.

B. DROUGHT IMPACTS ON STATE-OWNED LANDS

DNRC leases most of the 5 million acres of state-owned land it manages for grazing and agriculture. Extended periods of drought reduce the income producing potential of these lands for the school trust fund and contribute to a long term decline in the productivity of these lands. Through annual field evaluations and contacts with lessees, field offices are aware of the general condition and problems of state-owned lands.

FIRE RESPONSE SYSTEM

DNRC is responsible for minimizing the impact of wildfires through wildland fire prevention, pre-suppression, and suppression. DNRC also is charged by statute with sound management of the school trust land. This is accomplished through field activities aimed at reducing drought-related impacts on state-owned lands.

A. Prevention

Before the start of the fire season DNRC, along with other wildland fire fighting organizations, initiates a fire prevention planning effort aimed at reducing preventable fires. As drought conditions persist, the plan is updated and active fire prevention activities initiated. These activities include:

1. Use of press releases to notify the public of fire danger;
2. Delineation of high hazard areas of state land and patrolling, posting, and restricting access into these areas;
3. Cancellation of open burning permits and requesting the public to voluntarily cease operations involving the use of open fire, and;
4. Increasing the cooperation and coordination of activities with other fire protection agencies and county governments.

B. Wildfire Pre-suppression

As drought and fire conditions worsen, DNRC will initiate an increasingly active fire detection and response system aimed at rapid detection and deployment of firefighting resources. Increasing the frequency and duration of aerial detection flights and pre-positioning of personnel and equipment to high hazard areas helps reduce the response time to attack fires. The preparedness and readiness of DNRC personnel and equipment is stepped up as conditions worsen.

C. Wildfire Suppression

Suppression activities include all the work involved in the initial attack, containment, control, and extinguishing of a fire. The Department will utilize all the resources at its disposal to minimize the impact of wildfire.

RESTRICTIONS ON FOREST ACTIVITIES

DNRC may, through public proclamation, designate areas of high fire hazard and request all persons, firms, or corporations presently engaged in any activity in the areas to voluntarily cease operations or to adjust working hours to less critical periods of the day. In the event such a request is refused, the DNRC may issue a written order directing compliance.

CLOSURE OF AREAS DUE TO FIRE DANGER

When drought conditions exceed normal seasonal levels, and are predicted to continue worsening, and it is questionable whether localities will be able to cope with additional fires, a fire closure may be necessary to reduce human and other resource losses.

Under 87-3-106 MCA the governor, upon DNRC recommendation, may close an area or county to public access. The land remains closed as long as the fire closure is in effect. Closures are difficult to administer and, therefore, careful consideration must be given to all aspects of a closure prior to requesting one. Fire conditions and weather trends must be carefully analyzed. Close coordination between all agencies and strong local action are necessary to enforce the closure.

Requests for a fire closure must come from the governing body of the county. Requests received from other sources will be referred back to county commissioners for their recommendation. Commissioners submit the request to DNRC for consideration before it is forwarded to the governor. In analyzing a request for closure, DNRC, before recommending to the governor that an area be closed due to fire danger, will determine whether: The county has an active fire prevention, pre-suppression, and suppression program; that extreme burning conditions exist which exceed the normal seasonal buildup and endanger life and property, and that these conditions are expected to persist; the county has been suppressing fires, but appears unable to cope with additional fires; and that the county will enforce the closure if granted. An effort should be made to ensure that closure does not impact some activities, such as recreation, while allowing other activities, such as logging, to continue. Recreationists have played an important role in recent years in sighting and reporting wildfires.

DROUGHT RELATED IMPACTS ON STATE-OWNED LANDS

DNRC will help lessees of state-owned land with drought related problems on state lands. Technical assistance and cost share assistance is available for improvements on state-owned lands. Cost share assistance is normally available to state lessees for approved projects including new stockwater development, range renovation projects, and irrigation system improvement.

CONTACTS FOR DROUGHT RESPONSE INFORMATION

DNRC's primary coordinator for drought response information is Randy Mosley, Administrator, Field Operations Division, Phone 444-2074. The primary contact for fire danger and wildfire situation information is the DNRC's Fire Coordination Center, Forestry Division, Missoula, Phone 542-4290. Other contacts for regional information are as follows:

OFFICE	LOCATION	PHONE
Northwestern Land Office	Kalispell	542-7994
Southwestern Land Office	Missoula	542-4200
Central Land Office	Helena	444-3633
Northeastern Land Office	Lewistown	538-5989
Southern Land Office	Billings	259-3264
Eastern Land Office	Miles City	232-2034

DEPARTMENT OF FISH WILDLIFE AND PARKS
FISHERIES DIVISION
DROUGHT CONTINGENCY PLAN

Objectives

INTRODUCTION

OBJECTIVE I. Protect DFWP's Existing Instream Rights.

OBJECTIVE II. Supplement Streamflows through Purchase of Stored Water Leasing of Consumptive Rights, and Other Innovative Methods.

OBJECTIVE III. Obtain Reservoir Operations which Minimize Impacts to Fish, Wildlife and Recreation.

OBJECTIVE IV. Monitor Streamflow, Fish Populations and Fishing Use and Harvest to Ensure Carry-over of Wild Stream Fisheries while Maintaining Reasonable Opportunity for Harvest in all Streams and Lakes. Implement Emergency Regulations on Streams and Lakes as Needed.

OBJECTIVE V. Develop and Implement an Information and Education Program which Informs the Public and Maintains Consistency in the Department's Programs.

OBJECTIVE VI. Coordinate an Updated Department Drought Summary for Presentation to the Governor's Drought Advisory Committee and/or Disaster Advisory Council and the Fish, Wildlife and Parks Commission as Required.

OBJECTIVE VII. Develop and Implement Water Conservation Practices within the Agency.

Introduction

This document presents the drought contingency plan of the Fisheries Division of Montana Department of Fish, Wildlife and Parks (DFWP). The plan describes actions the Division will take to protect fishery resources, including protecting instream flow water reservations and rights, securing additional water for instream flow through purchase of stored water, water leasing, cooperation with reservoir operators, and implementing emergency fishing regulations where appropriate. In addition, the Fisheries Division will monitor fish populations and document drought impacts, develop and implement an information and education program which informs the public of drought conditions and effects on fishery resources and actively participate on the Govemor's Drought Advisory Committee.

The effects of drought on fishery resources is not confined to the single year of the drought conditions. Very low flows can greatly reduce recruitment of a year class of fish by limiting spawning and rearing habitat. The impact to fisheries may not be detected by recreationists for two to four years when the year class fails to appear in the fishery in significant numbers.

OBJECTIVE I. Protect our Existing Instream Rights

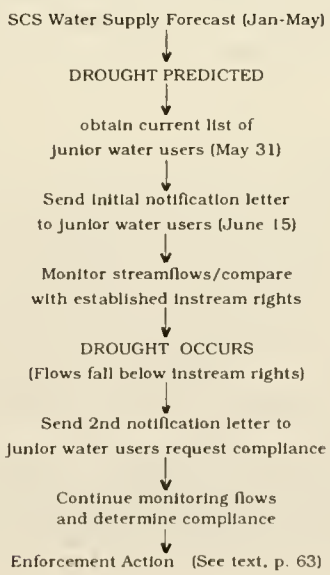
A. Summary of Existing Rights to be Protected

The instream rights to be protected include Murphy Rights on 12 streams, reservations on 66 Yellowstone basin streams, 249 Upper Missouri Basin streams, 18 Lower and Little Missouri Basin streams; Ashley Creek; Young Creek and Tobacco River. In the future other instream reservations may be granted by DNRC.

B. Protection Procedures

The schedule of decision points for protecting instream rights is shown in Figure 1.

Figure 1
IMPLEMENTATION SCHEDULE FOR PROTECTING INSTREAM RIGHTS AND RESERVATIONS


SCS Water Supply Forecast (Jan-May)
DROUGHT PREDICTED
obtain current list of junior water users (May 31)
Send initial notification letter to junior water users (June 15)
Monitor streamflows/compare with established instream rights
DROUGHT OCCURS (Flows fall below instream rights)
Send 2nd notification letter to junior water users request compliance
Continue monitoring flows and determine compliance
Enforcement Action (See text, p. 63)

Procedures Narrative

Water Supply Forecasts NRCS[1]

Montana's yearly water supply outlook is developed by the NRCS and its cooperators. Current snowpack and forecasts of runoff are issued each month from January through May. From these forecasts, it is possible to estimate streamflow conditions during the summer, enabling us to determine if we will need to notify junior water users about our instream rights and the possibility they may have to cease their diversions upon request.

List of Junior Water Users (Helena)

A current list of all junior water users is obtained from the Helena water rights office of the Department of Natural Resources and Conservation (DNRC) by May 31.

Initial Notification Letter (Helena)

If the water supply outlook is poor, an initial letter is sent to each water user whose water use priority date is junior to the priority date established for each of our instream water rights.

The initial letter simply informs those junior users of DFWP's prior right(s) in their source(s) of supply and indicates that we may, if unsuitable flow conditions actually materialize, notify them at a later time to cease their diversion(s). This letter is signed by the Department Director and is sent by regular mail. The letter should be sent by June 15 to allow junior users to develop alternatives to the use of their junior water.

Streamflow Monitoring (Helena/USGS)

Streamflows are monitored at established USGS gauging stations. Flow levels are obtained from the USGS's Helena office on a regular schedule, usually twice a week. These flows are compared to the respective instream water rights and the flow trend is monitored.

Monitoring of flows depends on having streamflow data available upon request at appropriate stream sites. These data can be obtained from non-recording gauges read daily by an observer or from continuous recording gages which automatically transfer data to a receiving station. Currently, none of streams where we have instream rights have gauges installed on them. Where gauges are not available on a particular stream, we use the closest downstream gauge which will record that stream's flow. Temporary portable gauges can be installed on streams for close monitoring during periods of low streamflow.

Second Notification Letter (Helena)

When the actual flow at any gaging station drops to the level of the established instream flow for that time of year, a second notification letter is sent to those junior users monitored by that gage. The letter requests the users to cease their diversion(s), presents gaging information and lists phone numbers they can call to keep track of the flows so they will know if they can again begin diverting water. This letter is our "call" for the water. This letter is also signed by the Department Director and is currently sent by regular mail. There is no established date on which to send this second letter; timing depends on flow conditions in a given year.

The intent of notification is to improve streamflows. Therefore, there are some exceptions to whom we send the second letter. If there are no junior users on a stream, or if the total junior use is too small to significantly affect streamflows if they cease diverting, the second notification

[1] Items in parenthesis identify responsible parties.

letter is not sent to those users. Accordingly, a decision must be made on each stream, depending on the amount of the instream water right and the number of junior users who can affect it. The flows, by month, which trigger the second notification letter are the same as the instream rights.

Enforcement Actions (Helena)

At this time, DFWP enforcement procedures rely largely upon voluntary compliance by junior water users. We do not have the time, personnel or expertise to monitor all junior users who are asked to cease their diversions unless an obvious violation is observed and reported.

The notification letters enable DFWP to maintain contact with junior users so they are again reminded of our rights. They are, therefore, primarily an informational tool — a precursor to being able to better administer those rights through a water commissioner. Court-appointed water commissioners on decreed streams are an effective means of administering instream rights and may solve immediate dewatering problems.

In contrast with its past policy, DNRC's water right enforcement activity may deal with both pre-1973 and post-1973 water rights. This policy is in response to circumstances arising from the severe drought conditions in 1992 and utilizes new authority granted by the 1991 legislature (85-2-122, MCA). The degree to which this policy will continue will depend upon an on-going evaluation of the policy during its implementation (See Appendix D, Montana Drought Response Plan). Steps to be taken by DNRC in responding to water right complaints are the following:

1. The alleged adversely affected water user (such as DFWP) makes a formal written "call" upon the junior appropriator.

2. If the "call" is ignored, the adversely affected water user (DFWP) files a written complaint with the DNRC.

3. A copy of the confirmed written "call" to the junior appropriator is submitted with DFWP's formal complaint to the DNRC.

4. The DNRC advises the alleged violator by telephone of the formal complaint and seeks a negotiated resolution of the dispute. No further action may be required.

5. If the dispute is not resolved informally, the DNRC sends a letter to the alleged violator notifying him/her of the complaint and the possible consequences of violating Montana's water laws. The letter will indicate that a field investigation has been or will likely be conducted. The letter also reminds the alleged violator that DNRC may assess a fine of up to $1000 per day for violating the Water Use Act.

6. Conduct a field investigation as soon as possible.

7. Continue to seek a negotiated resolution of the dispute.

8. If the alleged violation is not confirmed by the field investigation, send letter to both the DFWP and the alleged violator of this finding.

9. If a violation is confirmed, a second letter is sent to the alleged violator confirming the violation and reiterating possible enforcement actions to be taken.

10. If attempts to obtain a negotiated solution are unsuccessful within three days of sending written notification to the alleged violator, a recommended course of action is sent to Helena for review. A recommendation to fine the alleged water rights violator or litigate the issue shall be coordinated in consultation with the Water Rights Bureau Chief, appropriate staff and legal staff.

Additional Considerations

Current policy is to not enforce instream flow rights during the high flow period (approximately May 1 - July 15). The only real possibility of altering the existing spring runoff hydrograph (important for fish passage and spawning and maintaining channel configuration) on most streams is a large main stem impoundment. Should this future situation occur, the instream rights for the high flow period may have to be enforced.

Also, in 1980, DFWP agreed, through the Board of Natural Resources and Conservation, to relinquish a portion of our Yellowstone reservation for August and September and to not enforce our mainstem reservations between May 1 and July 10 on conservation districts above the Bighorn River. This was to satisfy the upper river conservation districts' concern over their 3rd priority to that water (municipalities have 1st and DFWP has 2nd priority). This agreement allows those CD agricultural water users to produce one hay crop in all years even if water is restricted during August and September in drought years when flows fall below the instream reservations.

C. Future Actions & Needs

In order for the Department to better protect existing instream rights in the future, an expanded stream gauging network and a mechanism for enforcement of instream reservations and rights will be required, The need for an expanded gauging network exists because large sections of rivers are currently ungauged. As a result, a reach of river could be flowing at less than the instream right and not be detected. Also, many smaller streams are ungauged.

DFWP can petition the district court to appoint a water mediator in a nondecreed basin. The court appointed water mediator can discuss water use and needs with persons and entities affected by current water use, hold public meetings and conferences and negotiate potential solutions to controversies over use of water. This process may be used by DFWP as appropriate.

OBJECTIVE II. Supplement Streamflows through Purchase of Stored Water, Leasing of Consumptive Rights, and other Innovative Methods

A. Bitterroot River - Painted Rocks Reservoir

A long term water purchase contract, expiring in 2003 has been approved by DNRC, replacing the annual contract (R-2, Helena)

Develop annual stored water release plan (R-2)

Contact agricultural interests who divert from Bitterroot River and obtain their concurrence to use a water commissioner (R-2)

Petition District Court for water commissioner (R-2 & Helena Legal Unit)

Implement planned releases from Painted Rocks Reservoir (R-2)

Monitor streamflows at Bell Crossing gauge (R-2)

B. Future Actions and Needs

Identify other opportunities for purchase of stored water (e.g. Tongue, Ruby and Como reservoirs)

Continue to identify high priority streams and rights for water leasing and obtain leases

Continue to develop innovative techniques for solving dewatering problems on critical streams

Continue to develop partner-ships with water users to work on solving dewatering problems on critical streams

OBJECTIVE III. Obtain Reservoir Operations which Minimize Impacts to Fish, Wildlife and Recreation.

A. Canyon Ferry Reservoir

Determine potential for drought conditions at annual meeting of Upper Missouri River Advisory Committee (DFWP chairs committee).

Monitor runoff and precipitation conditions through Bureau of Reclamation (BOR), NRCS, DNRC (Helena).

Hold additional advisory committee meetings as necessary if critical water supply conditions develop (Helena).

Recommend appropriate adjustments in reservoir operations according to Upper Missouri River Reservoir Operating Guidelines for fish wildlife and recreation (Committee action).

Monitor streamflow conditions and reservoir levels and revise recommendations as necessary for the duration of the drought period (Helena via contact with BOR and committee members).

B. Tiber Reservoir

Determine potential for drought conditions by April 15 (Helena through NRCS, BOR, DNRC)

Monitor snowpack, precipitation and runoff (Helena via USGS, NRCS, BOR, DNRC)

Implement recommended fish, wildlife and recreation operating guidelines through Tiber Reservoir Advisory Committee (Helena, R-4 via BOR)

Make additional recommendations, as necessary, if critical water supply conditions develop (R-4 via Advisory Committee/BOR).

C. Libby Reservoir

Contact Corps of Engineers (COE) in January to determine expected runoff conditions and projected reservoir operations (R-1).

Determine probability of achieving desired minimum streamflows as per 3-tiered flow agreement with COE. Also determine subsequent effect on reservoir levels (R-1).

If necessary, recommend alternative reservoir operation (R-1, Helena).

Monitor effects of altered operation as needed (R-1).

D. Fort Peck Reservoir

Meet with COE in March at annual reservoir operation meeting and discuss expected runoff conditions and reservoir operations (Helena, R-6).

If drought conditions appear likely, develop recommendations for reservoir water levels and downstream flow releases (Helena, R-6).

Monitor effects of implemented reservoir operations as needed (R-6).

Evaluate effects of operations and develop annual operation recommendation for summer meeting of Missouri River Natural Resource Committee.

E. Yellowtail Reservoir

Meet with BOR during April to determine expected runoff conditions and projected reservoir operation (R-5, Helena).

Determine probability of achieving agreed upon streamflows given in current Upper Bighorn River Fisheries Management Plan and subsequent effect on reservoir levels (R-5, Helena).

If necessary, recommend alternative reservoir operations (R-5, Helena).

F. Hungry Horse Reservoir

Meet with BOR in January to determine expected runoff conditions and projected reservoir operation (R-1, Helena).

* Determine probability of achieving desired releases for kokanee spawning in South Fork and main Flathead Rivers (Adjust desired releases according to expected numbers of spawning kokanee) (R-1).

* If necessary, recommend alternative reservoir operation (R-1).

* Monitor effects of releases and/or altered reservoir operation (R-1).

G. Future Action and Needs

* Committees similar to the Upper Missouri River and Tiber Reservoir Advisory committees should be established for Clark Canyon and Gibson reservoirs. Efforts are underway to form these groups.

* The 1990 drought management section of the State Water Plan included the recommendation to "Inventory and review the operating plans of state-funded reservoirs to ensure that these plans address drought contingencies. Where no operating plans exist for these reservoirs, such plans should be developed and implemented...". An inventory has shown that none of the state-funded reservoirs have drought contingency plans. DFWP should cooperate with DNRC to see that these plans are developed.

* Determine which state-owned reservoirs affect important downstream fisheries (Helena, regions).

* Determine amount of any unallocated water in the reservoirs and identify operational and structural (safety) constraints at each dam (Helena).

* Monitor streamflows during drought conditions to determine if additional releases are necessary (regions).

* Work with DNRC to obtain releases from state-owned reservoirs where the fishery and flow conditions warrant (Helena, regions).

OBJECTIVE IV. Monitor Streamflow, Fish Populations, Fishing Use, and Harvest to Ensure Carry-Over of Wild Stream Fisheries while Maintaining Reasonable Opportunity for Harvest in all Streams and Lakes. Implement Emergency Regulations on Streams and Lakes as Needed.

A. Population Monitoring - as noted in the introduction, drought affects recruitment. An impact which cannot be quantified until the year class affected enters the sport fishery. This impact will be detected in the Division's annual population monitoring activities and other on-site investigations and reported.

B. Emergency Regulations—Lakes and Reservoirs (Helena, regions)

These waters are usually stocked with hatchery fish. If low water levels or high water temperatures would jeopardize survival of the populations, regulations would likely be liberalized to allow maximum harvest of fish. Some waters may be deleted from the planting schedule in the drought years. Action will be taken on a case-by-case basis.

C. Emergency Regulations—Rivers and Streams (Helena, regions)

These waters are supporting wild populations of fish. As flows decline, more restrictive regulations or voluntary catch-and-release may be recommended.

OBJECTIVE V. Develop and Implement an information and Education Program which Informs the Public and Maintains Consistency in the Department's Programs.

Disseminate information on gradual shutdown of irrigation ditches to agricultural organizations and their news media (Helena, regions, via pamphlets & news releases)

Prepare weekly drought update by region describing effects of drought on lake and stream water supplies and fisheries and distribute to DAC (Helena, regions).

Compile, via USGS, twice weekly streamflow summaries on streams where DFWP holds instream water rights and distribute to DFWP regions and DNRC water rights field offices (Helena via USGS). Regional offices can also get flow data via USGS internet home page or phone USGS directly.

Prepare PSAs, new releases, and Montana Outdoors columns on effects of drought on fish and wildlife (Helena Fish and Con Ed staffs)

OBJECTIVE VI. Coordinate an Updated Department Drought Summary for Presentation to the Governor's Drought Advisory Committee and/or Disaster Advisory Council and the Fish, Wildlife and Parks Commission as Required. (Helena, regions)

Keep abreast of drought effects on fisheries and report findings.

Attend Drought Advisory Committee meetings as requested by Director.

Provide information to Drought Advisory Committee on effects of drought on fish and wildlife.

Provide to Director, as requested, the results of Advisory Committee actions.

Attend Disaster Advisory Council meetings as requested by Director when such council is created by Governor's Executive Order.

Assist local drought advisory task forces. Participate on subcommittees as requested.

Provide drought updates and DFWP responses to drought conditions to the Fish, Wildlife and Parks Commission as requested.

OBJECTIVE VII. Develop and Implement Water Conservation Practices within the Agency. (Helena, regions)

Determine best means to conserve water at fisheries installations, hatcheries and developed fishing access sites.

Implement suitable water conservation measures and monitor and report effects.

The following drought-related documents may be obtained from:

Department of Fish, Wildlife and Parks
Fisheries Division
P.O. Box 200701
1420 E. Sixth Avenue
Helena, MT 59620-0701

List of USGS stream gauges currently used to monitor instream flows.

Position statement regarding relinquishing a portion of Yellowstone instream flow reservation for August and September to benefit upper river conservation districts.

Documents relating to purchase and lease of water to supplement instream rights

List of DFWP instream flow rights and reservations

Membership list for Upper Missouri River Advisory Committee

List of state-owned reservoirs

List of chronically dewatered streams.

Federal reservoir operation guidelines for fisheries flows

Canyon Ferry (Missouri River)
Tiber Reservoir (Marias River)
Yellowtail Reservoir (Bighorn River)

MONTANA DEPARTMENT OF AGRICULTURE

Dryland Farming

1) The Montana Agricultural Statistics Service "Crop - Weather Report," prepared in cooperation with the Montana Department of Agriculture (Agriculture), reports crop conditions and soil moisture information. This information is published weekly April through October, and monthly from November through March. It is available to all agricultural producers and reported by the Montana media.

2) Agriculture encourages and supports use of the Federal Crop Insurance program by producers and evaluation of private insurance options to protect producers from devastation due to drought, hail or fire.

3) Agriculture will coordinate assessment and response activities with the Department of Livestock. Assessments and recommendations on impact mitigation strategies will be updated on a regular basis on the state's electronic bulletin board.

4) Protection efforts against wildfire will be enhanced as the severity of drought increases. The Cooperative Extension Service will offer education on water conservation and drought mitigation on an ongoing basis. Assistance response will be elevated to correspond with drought severity.

5) Agriculture, in cooperation with Cooperative Extension will offer education and research on drought resistant varieties, moisture-retaining tillage, and alternative domestic water supplies on an ongoing basis. Exploration of water storage alternatives will be continued. Cooperative Extension will work with the NRCS to establish a plan to work with and educate Montana producers on drought management activities.

6) The USDA is encouraged to develop and implement an active fire and insect protective program for Conservation Reserve Program (CRP) acreage. The program will be developed in coordination with producers and be feasible for implementation with existing management practices.

7) The Montana Department of Agriculture will work with the USDA / CFSA and Animal and Health Inspection Services to coordinate state actions with federal drought programs.

Irrigation Water Supplies

1) New water storage facilities should be developed where possible and be available to reduce drought impacts.

2) The capacity of existing water storage facilities should be increased where possible to meet irrigation needs and augment instream flows.

3) Cooperation between water users must be fostered to augment instream flows, including regulated releases from storage facilities. Drought contingency plans should be developed for water user organizations.

4) Agriculture will encourage irrigators to participate in water conservation practices such as scheduling, soil moisture measurement and monitoring, and the Agri-Met water use planning program offered by the Bureau of Reclamation.

*ALSO SEE DEPARTMENT OF LIVESTOCK ANNEX TO STATE DROUGHT PLAN

Agriculture Phone Numbers

Department of Agriculture ..... (406) 444-3144

Agriculture Electronic Bulletin Board 1-800-962-1729

Department of Livestock .....(406) 444-2043

Montana Livestock Crimestoppers ..... (800) 647-7464

Hay and Pasture Hotline..... (406) 444-2402

MONTANA DEPARTMENT OF LIVESTOCK

As a voting member of the DAC, the Department of Livestock will:

1) Encourage livestock producers to develop alternative water supplies and work with local county soil conservation districts to enhance existing water supplies and alternatives;

2) Use the Department of Livestock laboratory for analysis of water quality for livestock use and animal health;

3) Work with the Department of Agriculture on animal health issues in controlling disease and moving livestock as outlined in the annex;

4) Work with the Soil Conservation Districts to educate livestock producers on stream bank riparian protection to maintain water supplies;

5) Increase predator control, especially where livestock has not been grazing and a high population of predators have been preying on the wildlife, or where the normal prey of the predator has been reduced due to the drought, and;

6) Develop range information to accompany the hay hotline available through the Department of Administration electronic bulletin board.

Livestock Phone Numbers

Department of Livestock	(406) 444-2043
Montana Livestock Crimestoppers	1-800 647-7464
Department of Agriculture	(406) 444-3144
Agriculture Electronic Bulletin Board	1-800-962-1729
Hay and Pasture Hotline	(406) 444-2402

DISASTER AND EMERGENCY SERVICES

1) Disaster and Emergency Services (DES) will provide assistance to the DAC in several ways. This assistance will include, but not be limited to, directing emergency or disaster program functions as authorized by the governor; acting as the liaison with local DES coordinators; coordinating the formation of local drought advisory committees and drafting recommended correspondence for the governor and county commissioners.

2) DES will assist and coordinate damage assessment activities, as needed. This task generally involves compiling the damage information the governor forwards to the USDA when requesting Natural Disaster Determination.

3) DES will help DNRC provide information concerning the drought designation to any agency or individual requesting assistance.

4) DES will coordinate the application process and implementation procedures for USDA Natural Disaster Determinations, assist in formulating any executive orders or proclamations, and act as liaison with other agencies and organizations in developing the natural disaster process. The current process is as follows:

   a) The county commissioners must request the governor to initiate the drought declaration process in writing;

   b) DES coordinates with the governor to request federal assistance through the USDA Montana office;

   c) DES recommends and prepares draft correspondence for the governor to notify the county commissioners as to the status of their request during the entire process;

   d) The USDA requests damage assessment information from the local CFSA and NRCS offices in the affected areas;

   e) The damage assessment information is returned to the USDA and forwarded to the State Emergency Board (SEB) for assessment and review;

   f) The SEB returns their recommendation to the USDA. The USDA forwards the final information with their recommendation to DES; comments are sent to the secretary of agriculture;

   g) DES prepares a packet for the governor including a draft letter for submission to the secretary of agriculture requesting Natural Disaster Determination;

   h) The governor sends the packet to the secretary of agriculture. The secretary of agriculture processes all information and sends a determination regarding Natural Disaster Designation to the governor;

   i) DES then prepares draft correspondence for the governor notifying the involved counties as to the final status of their request. Completion of the entire process can take up to six months (see Appendix E).

Producers in those counties designated as drought areas are eligible for assistance from CFSA. According to the Emergency Agricultural Credit Act of 1984, producers in contiguous counties are eligible to apply for the same assistance from CFSA.

The Small Business Administration (SBA) announces eligibility of businesses in designated counties for low-interest emergency loans shortly after USDA announces the list of designated natural disaster counties.

Internal Revenue Service (IRS) tax considerations apply when a designation is issued as referred to in the IRS publication 225 - "Farmers Tax Guide." Interested parties should check with the nearest IRS Office for information.

If you have any questions, please contact Montana Disaster and Emergency Services at 444-6911.

DEPARTMENT OF COMMERCE

I. Monitoring and Reporting Responsibilities

The Department of (Commerce) is a member of the Drought Advisory Committee and as such, is informed along with other members of the committee about drought conditions as they develop across the state. Information detailing existing and potential drought conditions in Montana is developed by other state and federal agencies and disseminated to the committee membership. As a member of the committee, Commerce plays a role in monitoring and reporting the drought conditions in Montana.

II. Assessment Responsibilities

Drought impact assessment by Commerce will concentrate on mitigating the impact of drought on the tourism sector of the economy. Commerce also maintains data (current and historical) on state-level and county-level income, wages, salaries and employment from the Bureau of Labor Statistics at the Department of Labor & Industry, and from the Bureau of Economic Analysis, which is part of the U.S. Department of Commerce. This data is available to all agencies involved in the assessment of drought impact on agriculture and other industry sectors.

A. Tourism Assessment

Information pertaining to drought and its impact on Montana's tourism industry is readily available to Commerce. Impact assessment is conducted as follows:

1. Information is compiled by Commerce on inquiries by out-of state callers to the toll free phone line available at the Montana Promotion Division. This information is useful in determining the extent to which awareness of Montana's drought situation is affecting tourists' attitude about visiting the state. Changes in tourism as a result of negative perceptions of prospective visitors can be very damaging to Montana's economy.

2. The status of the state's tourism industry is tracked on a monthly basis. Information is assembled from various sources such as the National Park Service (counting park visitors) and elements of the industry itself (comparing current to past activity at specific facilities). This data is used to prepare impact assessments for the DAC.

3. General tourism industry conditions are analyzed from statistics available from the Bureau of Labor Statistics (Department of Labor and Industry) and from the Bureau of Economic Analysis (U.S. Department of Commerce). Data are available on monthly, quarterly, or yearly basis to illustrate employment in the "services" sector (hotels and other lodging) of the economy through comparison of current conditions with previous months and years. In order to analyze the potential impact of drought on the tourism industry, it would be necessary for the Institute for Tourism & Recreation Research at the University of Montana to analyze the data. ITRR will conduct "conversion" studies to indicate the extent of visitors who did not come because of an awareness of drought.

B. Other Business and Industry Assessment

The businesses and industries most likely to be affected by drought are those which depend upon the state's natural resources for their well being. The two major industries affected by drought are agriculture and tourism. Industries such as the timber industry can be affected if forests are closed because of fire danger. Many other businesses would be less directly affected. Commerce tries to assess the impact of drought on these secondarily-affected businesses by reviewing income and

employment data available from the Department of Labor & Industry and from the U.S. Bureau of the Census. Commerce also receives telephone inquiries from concerned businesses and informs them of the appropriate resource or agency to contact.

III. Response

Two general avenues of activity are suggested for meeting the Department's charge of reducing drought impact on commerce and tourism where possible and in promoting water conservation practices.

A. TOURISM RESPONSE

Drought's impact on the tourism industry is related not only to actual water shortage but also to how public notice of a drought situation is handled. The public's reaction to dry conditions in one area may expand to negative perception of the entire state if publicity is not accurate in its portrayal of drought. The Department will remain mindful of this situation in its drought response activities. The following vehicles are available for use in tourism-related response activities:

1. The tourism advice toll free line available to out-of-state callers can be used to inform the travelers about moisture conditions in various parts of the state. Information can be provided relative to actions being taken by other state and federal agencies such as forest closures, special fishing regulations and other official actions which will affect tourist behavior.

2. The Montana Promotion Division has the capability to produce radio and television news releases. Directions to the touring public can be disseminated in this manner.

3. The Montana Promotion Division can be established as a tourist advisory center by publicizing its telephone number or connecting with an in-state toll free number for the use by tourists and those involved in the tourism industry.

B. OTHER BUSINESS AND INDUSTRY RESPONSE

Commerce's response to drought and its possible effects on Montana's retail businesses, mining operations, and industrial facilities will vary widely depending on severity of conditions and the type of commercial activity involved. The Department will provide information to those segments of Montana's economy in need of it. This includes referencing the drought relief assistance guide, informing parties about the types of information available, and providing telephone numbers of those agencies with information. The department will assist in implementing emergency measures that might be necessary in seeking cooperation from businesses and industry.

Response Area	Phone
Department Drought Coordinator	444-3797
Tourism Contact	444-2654
Business & Industry Contact	444-3814

APPENDIX B
State Water Plan Section: Drought Management

December 1990

The following selected passages from the final plan section on drought management are included for a review of the issues identified by the steering committee and its recommendations for addressing them.

Issue 1: Drought Monitoring and Early Warning

Recommendations:

1) Pursue the calculation of the Palmer Drought Severity Index (PDSI) for smaller geographical areas.

2) Encourage the continued development and revision of basin-specific Surface Water Supply Indices (SWSIs).

3) Improve data collection and forecasting by getting the information to those who are vulnerable to drought.

Issue 2: Impact Assessment

Recommendation:

1) Coordinate the efficient and timely assessment of impacts related to various water uses. A list of the individuals with the expertise to assess impacts should be maintained.

Issue 3) Coordination of Governmental Actions

Recommendations:

1) Replace the current drought plan, by directive of the governor, with a document that incorporates the recommendations of the state water plan.

2) Reassign the responsibility for state drought management coordination from the DES to the DAC.

Issue 4: Triggering Mechanism

Recommendations:

1) The drought plan should recommend specific actions corresponding to numerical indicators of drought severity.

2) Besides the PDI and SWSI, other types of data should be used to indicate the onset and severity of drought.

Issue 5: Assistance programs

Recommendations:

1) Update the list of state and federal assistance programs in the state drought plan.

2) Provide technical and financial assistance to local drought advisory committees (LDACs) for promoting drought preparedness.

3) Encourage producers to apply to the Federal Crop Insurance Program is still operational.

Issue 6: Funding for Drought Management Programs

Recommendations:

1) Apply for grant funding for a pilot program in drought management.

Issue 7: Research and Educational Programs

Recommendations:

I) Encourage the use of existing educational programs for drought awareness.

2) Support ongoing research into ways to improve drought monitoring, assessment, and mitigation.

3) Publish and distribute a comprehensive annotated directory of available educational resources about water conservation.

4) Make better use of the media for informing the public about drought management options and activities.

Issue 8: Drought Mitigation Strategies

Recommendations:

1) Increase the educational emphasis given to forest and range management practices for the minimizing of drought impacts.

2) Inventory operating plans of reservoirs to ensure drought contingency plans.

3) Develop and implement drought plans for state-owned reservoirs.

4) Establish stronger economic and other incentives for private investments in water conservation.

5) Consider feasible water storage where it will increase water supply security.

6) Consider basin closure by petition of local water users to avoid aggravation of water shortage situations and over-appropriation.

7) Encourage voluntary water conservation by domestic, municipal, and industrial users.

8) Clarify state law so that water rights holders who conserve water are clearly allowed to sell or lease salvaged water in a manner that does not adversely affect water rights.

9) Improve water conveyance efficiencies in agricultural, municipal, and industrial uses.

10) Clarify state law to allow voluntary, temporary changes of water rights and contract water exchanges.

11) Support the water measurement program in implementing the measurement of streamflow on chronically-dewatered streams and rivers where the program can provide benefits to water users and water resource planning.

12) Find ways to expedite the resolution of water rights conflicts and water rights enforcement during drought.

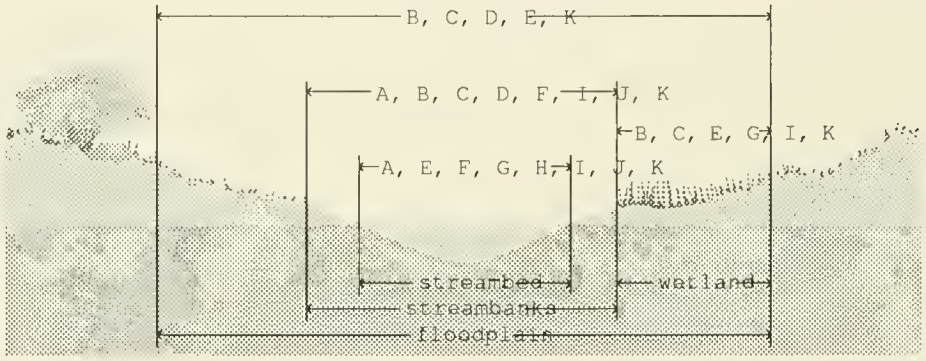
13) Develop a model water conservation ordinanace for use by municipalities and rural domestic water suppliers and assist in implementation efforts.

APPENDIX C
PERMITS COMMONLY REQUIRED DURING DROUGHT

A GUIDE TO

STREAM PERMITTING

IN MONTANA



GUIDE TO REQUIRED PERMITS

Using the diagram above, determine where your project will take place: streambed, streambanks, wetlands, or floodplain. The letters in the diagram refer to the required permits listed below and described on the following pages.

Permits that may be necessary:

A. Montana Stream Protection Act (SPA Permit)
B. Storm Water Discharge General Permits
C. Streamside Management Zone Law
D. Montana Floodplain and Floodway Management Act (Floodplain Development Permit)
E. Short-Term Exemption from Montana's Surface Water Quality Standards (3A Authorization)
F. Montana Natural Streambed and Land Preservation Act (310 Permit)
G. Montana Land-Use License or Easement on Navigable Waters
H. Montana Water Use Act (Water Right Permit)
I. Federal Clean Water Act (404 Permit)
J. Federal Rivers and Harbors Act
K. Other laws that may apply, depending upon your location and activity

MONTANA STREAM PROTECTION ACT (SPA Permit)

Who Must Apply
Any agency or subdivision of federal, state, county, or city government proposing a project that may affect the bed or banks of any stream in Montana.

Activities Requiring a Permit
Any project including the construction of new facilities or the modification, operation, and maintenance of an existing facility that may affect the natural existing shape and form of any stream or its banks or tributaries.

Purposes of the Law
- To protect and preserve fish and wildlife resources.
- To maintain streams and rivers in their natural or existing state.

Who Administers the Law
Department of Fish, Wildlife and Parks (DFWP).

Application Procedure/Timeline
Any agency or unit of government planning a project must submit a Notice of Construction (application) to the Department of Fish, Wildlife and Parks, which has up to 60 days to review the application, perform an on-site investigation, and approve, modify, or deny the application. There is no application fee.

For more information contact:
Habitat Protection Bureau
Fisheries Division
Department of Fish, Wildlife and Parks
1420 East Sixth Avenue
P.O. Box 200701
Helena, MT 59620-0701
(406) 444-2449

STORM WATER DISCHARGE GENERAL PERMITS

Who Must Apply
Any person, agency, or entity, either public or private, proposing construction, industrial, or mining activity that will discharge storm water to state waters.

Activities Requiring a Permit
- Construction activity that will disturb more than 5 acres total or more than 1 acre total if that acre is located less than 100 feet from state waters.
- Industrial activity that will discharge storm water as a point source to state waters.
- Mining or oil and gas activity in which storm water will come into contact with overburden, raw material, intermediate products, finished products, or waste products located on the site of such operations (including active and inactive mine sites) and discharge to state waters.

Purposes of the Law
- To prevent degradation of state waters from pollutants such as sediment, industrial chemicals or materials, heavy metals, and petroleum products.
- To protect existing water quality.
- To monitor the effectiveness of best management practices used to reduce pollutant loads.

Who Administers the Law
Water Quality Bureau, Department of Environmental Quality.

Application Procedure/Timeline
An application must be submitted 30 days prior to beginning a construction project or starting operation of a new facility.

For more information contact:
Water Quality Bureau
Department of Environmental Quality
1400 Broadway
P.O. Box 200901
Helena, MT 59620-0901
(406) 444-2406

STREAMSIDE MANAGEMENT ZONE LAW

Who Must Apply
Any landowner or operator conducting a series of forest practices that will access, harvest, or regenerate trees on a defined land area for commercial purposes on private, state, or federal lands.

Activities Requiring a Permit
this law prohibits the following timber activities within at least 50 feet of any stream, lake, or other body of water. The Department of Natural Resources and Conservation must approve any exceptions to these prohibited practices.
- Broadcast burning
- Operating wheeled or tracked vehicles except on established roads
- Clearcutting
- Constructing roads in the Streamside Management Zone except when necessary to cross a stream or wetland
- Handling, storing, applying, or disposing of hazardous or toxic material in a manner that pollutes streams, lakes, or wetlands or that may cause damage or injury to humans, land, animals, or plants
- Casting road material into a stream, wetland, or watercourse
- Depositing slash in streams or other water bodies

Purposes of the Law
- To protect the quality and quantity of forest waters.
- To conserve the integrity of Montana's streamside zones.

Who Administers the Law
Department of Natural Resources and Conservation (DNRC).

Application Procedure/Timeline
DNRC must be notified prior to beginning **any** forest practice. A request to conduct an alternative practice must be submitted to the appropriate DNRC field office. Alternative practices will require an environmental review. The request will be reviewed and an initial response issued within 10 days.

For more information contact:
Forestry Division
Department of Natural Resources and Conservation
2705 Spurgin Road
Missoula, MT 59801
(406) 542-4300 or
Local DNRC Field Office

MONTANA FLOODPLAIN AND FLOODWAY MANAGEMENT ACT (Floodplain Development Permit)

Who Must Apply
Anyone planning new construction within a designated 100-year floodplain. Check with local planning officials or the Floodplain Management Section of the Department of Natural Resources and Conservation to determine whether a 100-year floodplain has been designated for the stream of interest.

Activities Requiring a Permit
New construction including, but not limited to, placement of fill, roads, bridges, culverts, transmission lines, irrigation facilities, storage of equipment or materials, and excavation; new construction, placement, or replacement of manufactured homes; and new construction, additions, or substantial improvements to residential and commercial buildings.

Purpose of the Law
• To restrict floodplain and floodway areas to uses that will not be seriously damaged or present a hazard to life, if flooded, thereby limiting the expenditure of public tax dollars for emergency operations and disaster relief.

Who Administers the Law
Floodplain Development Permits are available from the local floodplain administrator, who may be the city/county planner, sanitarian, building inspector, town clerk, or county commissioner.

Application Procedure/Timeline
Permit applications are available from the local floodplain administrator or from the Department of Natural Resources and Conservation. Application fees are established by the local government and vary widely throughout the state. The application process may take up to 60 days.

Information and assistance may be obtained from:
Floodplain Management Section
Department of Natural Resources and Conservation
1520 East Sixth Avenue
P.O. Box 202301
Helena, MT 59620-2301
(406) 444-6610
or
Local Floodplain Administrator

SHORT-TERM EXEMPTION FROM MONTANA'S SURFACE WATER QUALITY STANDARDS (3A Authorization)

Who Must Apply
Any person, agency, or entity, both public and private, initiating a short-term activity that may cause unavoidable short-term violations of state surface water quality standards for turbidity, total dissolved solids, or temperature.

Activities Requiring an Authorization
Any activity in any state water that will cause unavoidable short-term violations of water quality standards. "State water" includes any body of water, irrigation system, or drainage system, either

surface or underground, including wetlands, except for irrigation water where the water is used up within the irrigation system and the water is not returned to other state water.

Purposes of the Law
- To provide short-term exemptions from water quality standards to certain activities carried out in accordance with conditions prescribed by the Department of Environmental Quality.
- To protect water quality.
- To minimize sedimentation.

Who Administers the Law
Water Quality Bureau, Department of Environmental Quality.

Application Procedure/Timeline
A 3A Authorization must be obtained prior to initiating a project. The authorization may be obtained from the Water Quality Bureau, or may be waived by the Department of Fish, Wildlife and Parks during its review process under the Natural Streambed and Land Preservation Act (310 Permit) or the Stream Protection Act (SPA Permit). Individual applications submitted to the Water Quality Bureau are normally processed within 14 days. Authorizations waived under the 310 or SPA permit processes correspond to the time frame under each permit system, usually 30 to 60 days. There is no application fee.

For more information contact:
Water Quality Bureau
Department of Environmental Quality
1400 Broadway
P.O. Box 200901
Helena, MT 59620-0901
(406) 444-2406

MONTANA NATURAL STREAMBED AND LAND PRESERVATION ACT (310 Permit)

Who Must Apply
Any private, **nongovernmental** individual or entity that proposes to work in or near a stream on public or private land.

Activities Requiring a Permit
Any activity that physically alters or modifies the bed or banks of a stream.

Purposes of the Law
- To minimize soil erosion and sedimentation.
- To protect and preserve streams and rivers in their natural or existing state.
- To prevent damage to the lands and property immediately adjacent to streams and rivers.

Who Administers the Law
The board of supervisors of the conservation district in which the project takes place.

Application Procedure/Timeline
A person planning a project must contact the conservation district office to obtain a permit application prior to any activity in or near a stream. After submission of an application to the conservation district office, district supervisors must determine within five days of their next monthly

meeting if the proposed activity requires a 310 permit. If a permit is required, a team composed of a district supervisor; a Department of Fish, Wildlife and Parks biologist; and the landowner conducts a site inspection. **The supervisors have 60 days from the date of application to approve or deny the permit.** There is no charge for a 310 permit.

For more information contact:

Your Local Conservation District
or
Montana Association of Conservation Districts
501 North Sanders
Helena, MT 59620
(406) 443-5711
or
Conservation Districts Bureau
Department of Natural Resources and Conservation
1520 East Sixth Avenue
P.O. Box 202301
Helena, Montana 59620-2301
(406) 444-6667 Helena
or
your local conservation district office

MONTANA LAND-USE LICENSE OR EASEMENT ON NAVIGABLE WATERS

Who Must Apply
Any entity proposing a project on lands below the low water mark of navigable waters as determined by the Department of Natural Resources and Conservation (DNRC).

Activities Requiring a Permit
The construction, placement, or modification of a structure or improvement on lands below the low water mark of navigable streams. If in doubt, contact the DNRC Area Land Office with jurisdiction over the project area for a determination of the navigability of the stream and the location of the low water mark.

This permit program does not apply to mining activities in navigable streams or lakes. Those activities are addressed by the department's Minerals Management Bureau.

Purposes of the Law
- To protect riparian areas and the navigable status of the water body.
- To provide for the beneficial use of state lands for public and private purposes in a manner that will provide revenues without harming the long-term capability of the land or restricting the original commercial navigability.

Who Administers the Law
Department of Natural Resources and Conservation.

Application Procedure/Timeline
A DNRC land-use license or easement application, along with the nonrefundable application fee and the Application for Licensing Structures & Improvements on Navigable Water Bodies (Form DS-432), must be submitted to the appropriate Area Land Office, located in Kalispell, Missoula,

Helena, Lewistown, Billings, or Miles City. The Area Land Office staff will review the application, conduct a field investigation if necessary, and file an environmental action checklist. A written report and recommendation is then submitted to the Surface Management Bureau in Helena, which makes the final determination and recommends stipulations as necessary. A Land-Use License can normally be reviewed, approved, and issued within 60 days upon the payment of the $25 application fee and a minimum annual rental fee set by the department. The license may be held for a maximum period of 10 years, with the ability to request renewal for an additional 10 years. An easement requires approval from the Board of Land Commissioners, which normally takes up to 90 days. The current easement application fee is $50 with an additional easement fee that varies based upon 50 percent of the appraised value of the adjoining property.

For more information contact:
DNRC Area Land Offices or Surface Management Bureau
Department of Natural Resources and Conservation, 1520 East Sixth Avenue,
Helena, MT 59620-2301 (406) 444-2074.

MONTANA WATER USE ACT
(Water Right Permit)

Who Must Apply
Any person, agency, or governmental entity intending to acquire new or additional water rights or change an existing water right in the state.

Activities Requiring a Permit
General Rule - A person must obtain a beneficial water use permit **before commencing** to construct new or additional diversion, withdrawal, impoundment, or distribution works for appropriation of **groundwater over 35 gallons per minute or 10 acre-feet per year or for any surface water.**

Exceptions - Groundwater appropriations of 35 gallons per minute or less and 10 acre-feet or less and stockwater impoundments of less than 15 acre-feet must first be appropriated and put to beneficial use before a water right will be issued.

Types of Water Rights
Provisional Permit - Grants the use of water for a specific amount and purpose.
Temporary Permit - The same as the provisional permit, except it has an expiration date.
Certificate of Water Right - Issued on groundwater appropriations of 35 gallons per minute or less and 10 acre-feet or less.
Authorization to Change - Allows an appropriator with a recognized water right to change the place of use, point of diversion, purpose of use, or place of storage and maintain the priority date of the initial water right.
Temporary Change - Allows an appropriator to change the water right temporarily for a period of up to ten (10) years. No authorization is required for the water right to revert to the original purpose, point of diversion, place of use, or place of storage after the term expires.

Purposes of the Law
- To provide a permit and certificate system of water rights administration similar to systems used in other Western states.
- To maintain a general adjudication of all existing water rights in the state.
- To implement a centralized record system in addition to the local courthouse records.

Who Administers the Law
Water Rights Bureau, Department of Natural Resources and Conservation (DNRC).

Application Procedure/Timeline
Water right application forms are available at all 56 county clerk and recorders' offices and at the nine Water Resources Regional Offices **located in Billings, Bozeman, Glasgow, Havre, Helena, Kalispell, Lewistown, and Missoula.**

Water right applications may take up to six months to complete. The water permit application fee is $100.00. The fee for an application for change is $100.00. The fee for a Certificate of Water Right on groundwater developments of 35 gpm or less and 10 acre-feet or less is $25.00.

For more information, contact:
Water Rights Bureau
Department of Natural Resources and Conservation
1520 East Sixth Avenue
P.O. Box 202301
Helena, MT 59620-2301
(406) 444-6610
or
Local DNRC Water Resources Regional Office

FEDERAL CLEAN WATER ACT
(404 Permit)

Who Must Apply
Any person, agency, or entity, either public or private, proposing a project that will result in the discharge or placement of dredged or fill material into waters of the United States. "Waters of the United States" include lakes, rivers, streams, wetlands, and other aquatic sites.

Activities Requiring a Permit
Any activity that will result in the discharge or placement of dredged or fill material into waters of the United States, including wetlands.

Purpose of the Law
- To restore and maintain the chemical, physical, and biological integrity of the nation's waters.

Who Administers the Law
The U. S. Army Corps of Engineers (Corps). The Environmental Protection Agency also has regulatory review and enforcement functions under the law.

Application Procedure/Timeline
Any person, agency, or entity, either public or private, planning a project must submit an application to the Corps for review. Permit authorization varies depending on the size and scope of the intended project. Activities that meet the conditions for a Nationwide or Regional General Permit may be approved in 10 days or less. Individual Permits are processed individually and require a public review period. Permit approval may take 60 to 90 days. Application fees for Individual Permits may vary from $10 for private individuals to $100 for commercial applicants.

For more information contact:
U. S. Army Corps of Engineers
1520 East Sixth Avenue
P.O. Box 202301
Helena, MT 59620-2301
(406) 444-6670

FEDERAL RIVERS AND HARBORS ACT

Who Must Apply
Any person, agency, or entity, either public or private, proposing any alteration of, or any construction activity in, on, or over any federally-listed **navigable** water of the United States.

Activities Requiring a Permit
The construction of any structure in or over any federally-listed navigable waters of the United States, the excavation from or depositing of material in such waters, or the accomplishment of any other work affecting the course, location, condition, or capacity of such waters. Navigable waters in Montana are the Missouri River from Three Forks downstream to the Montana-North Dakota border, the Yellowstone River from Emigrant downstream to its confluence with the Missouri River, and the Kootenai River from the Canadian border downstream to Jennings, Montana.

Purpose of the Law
- To protect the quality and quantity of navigable waters of the United States.

Who Administers the Law
The U. S. Army Corps of Engineers (Corps).

Application Procedure/Timeline
Applications must be submitted to the Corps for review. Project approval may take 60 to 90 days. Application fees for individual permits may vary from $10 for private individuals to $100 for commercial applicants.

For more information contact:
U. S. Army Corps of Engineers
1520 East Sixth Avenue
P.O. Box 202301
Helena, MT 59620-2301
(406) 444-6670

OTHER LAWS THAT MAY APPLY

County Septic System Regulations
Apply to anyone proposing to construct, alter, extend, or operate a sewage treatment and disposal system. Conventional systems must be 100 feet from the 100-year floodplain and 6 feet from groundwater. Alternative designs that are 4 to 6 feet from groundwater must be approved.

Contact: County Sanitarian

General Mining Laws/Small Miner's Placer and Dredge Operations
Apply to anyone operating a placer, dredge, hardrock, coal, sand, or gravel mine on private or public land.

Contact: Reclamation Division
Department of Natural Resources and Conservation
1625 Eleventh Avenue
Helena, MT 59620
(406) 444-2074

Lakeshore Protection Act
Applies to all private individuals and government entities proposing to do work in or near a body of water within a county's jurisdictional area.

Contact: County Government Offices

Montana Dam Safety Act

Applies to the construction, repair, or removal of any dam that impounds 50 acre-feet or more at the normal operating pool.

Contact: Dam Safety Section
Water Operations Bureau
Department of Natural Resources and Conservation
1520 East Sixth Avenue
P.O. Box 202301
Helena, MT 59620-2301
(406) 444-6610

Montana Pollutant Discharge Elimination System (MPDES Permit)

Applies to all discharges to surface water or groundwater, including those related to construction, dewatering, suction dredges, and placer mining.

Contact: Water Quality Bureau
Department of Environmental Quality
1400 Broadway
P.O. Box 200901
Helena, MT 59620-0901
(406) 444-2406

Montana Water Quality Act

Prohibits the pollution of state waters and the placement of wastes in a location where they are likely to cause pollution of any state water.

Contact: Water Quality Bureau
Department of Environmental Quality
1400 Broadway
P.O. Box 200901
Helena, MT 59620-0901
(406) 444-2406

Public Water Supply Watersheds

Requires the submission, review, and approval of detailed plans and specifications before beginning the construction or operation of any new railroad, logging road, logging camp, or electric or manufacturing plant in a public water supply watershed.

Contact: Water Quality Bureau
Department of Health and Environmental Sciences
1400 Broadway
P.O. Box 200901
Helena, MT 59620-0901
(406) 444-2406

Shoreline Protection and Aquatic Land Conservation Ordinances

Apply to all private individuals and government entities proposing to work in, over, or near any stream, river, lake, or wetland on the Flathead Reservation.

Contact: Shoreline Protection Office
Flathead Reservation Tribal Complex
P.O. Box 278
Pablo, MT 59855
(406) 675-2700 ext. 368

APPENDIX D:
POLICY FOR RESOLUTION OF WATER USE CONFLICTS AND WATER RIGHTS ENFORCEMENT PROCEEDURE

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
WATER RESOURCES DIVISION
WATER RIGHTS BUREAU

ADMINISTRATIVE POLICY NO.	FINAL DATE October 20, 1994
3	APPROVED: Chief, Water Rights Bureau Regional Office Supervisor Administrator, Water Resources Dv.

CONFLICT RESOLUTION AND ENFORCEMENT ACTIONS
UNDER THE WATER USE ACT

I. SCOPE

This policy establishes the procedures for facilitating the resolution of complaints of alleged water use violations and the process the department will follow to seek judicial enforcement under Sections 85-2-114 and 85-2-122, MCA. Water Resources Division (Division) staff will first attempt to negotiate a resolution of a conflict between water users. If this is unsuccessful and the violation continues, judicial enforcement may be sought. When the violator refuses to comply with a notice and Order from the department and the department decides to seek judicial enforcement of its order, seek a temporary restraining order, injunctive relief, or to collect a fine, the department will petition the district court according to this policy.

II. AUTHORITY

Under Section 85-2-114, MCA the department may petition the district court upon finding the following:

A person is,

1. wasting water
2. using water unlawfully
3. preventing water from moving to another person having a prior right to the water, or
4. otherwise violating any provision of the Water Use Act.

Further, the department may assess a fine on the violator

under Section 85-2-122, MCA. The fine may not exceed $1000.00 a day for each day of the violation.

The department may seek a temporary restraining order or injunctive relief and/or petition the court to enforce the penalty and collect the fine.

III. VIOLATIONS FOR ENFORCEMENT

Probably the most frequent violation of the Water Use Act in the state is appropriating water without a water use permit or outside the parameters of a permit. Other violations which may occur include appropriating water outside the parameters of an existing water right or a certificate of water right (gw < 35 gpm and 10 AF), changing a water right without authorization, violating the terms of a basin closure, or controlled groundwater area or wasting water. The more significant violations involve public health issues.

Due to insufficient resources the department is not capable of pursuing every violation which it is aware of therefore, priorities for enforcement must be considered. When determining which violations will be pursued, the department will consider the magnitude and significance of the violation, its effect on the public health or the impact of pursuing enforcement. Other considerations that will affect the type and number of violations pursued will be the availability of regional office and legal staff and the existence of a complaint. A complaint is always required unless the regional manager can document compelling reasons for recommending enforcement without one.

A general prioritization of possible enforcement situations is described in ***Exhibit A***. The highest priority would be violations which cause a public health concern. The lowest priority are violations which cause property damage. This is a guide to assist regional managers in making enforcement decisions on various violation situations.

IV. PENALTY / FINE

The department has the authority to assess a fine of up to $1000.00 a day for violations to the Water Use Act. When the department issues an Order assessing a fine it will be for $1000.00 per day. However, when going into court the department will justify the amount of the fine. Therefore, in all cases where we may need to assess a fine, all department costs shall be identified and maintained for future justification. All staff associated with the investigation and determination on enforcement shall keep a record of their time (costs). This must include correspondence, other communication costs, field investigation costs, and staff time. When deemed appropriate the department will also consider the economic value of the violation

to the violator. If their continued violation will probably net them more benefit than the cost of the fine, the department must adjust the fine to take this into consideration.

V. CONFLICT RESOLUTION

When the Division receives a complaint alleging a violation, the regional office will follow the steps below in its attempt to resolve the conflict. Not all complaints received by the Division involve immediate and serious injury to a party. Except in unusual circumstances such as an immediate threat to public health or safety, all complaints will be processed beginning at step one below.

Step 1. Complainant makes a "Call"

Advise the complainant to contact the alleged violator and make a *"call"* on the water that is allegedly being illegally appropriated. This includes sending a written confirmation of the *"call"* to the alleged violator.

Step 2. Written Complaint

Request that the complainant submit a written complaint to the regional office. The complaint should specify the nature of the alleged violation, who is involved, where it is taking place, and when it occurred. It is recommended the complaint form, ***Exhibit B,*** be sent to the complainant to complete. Advise the complainant to attach a copy of the written confirmation of the call to the formal complaint.

Step 3. Private Enforcement Option

Suggest mediation between the parties to resolve the issue. Advise the complainant that if they are insisting on immediate court action (in a day or two) that they should plan their own private enforcement action. Also advise the complainant that enforcement action by the department may depend on the complaining party's willingness to pursue litigation or to provide testimony. Further, enforcement will depend on the facts of the case and the availability of resources.

Step 4. Telephone Contact

Upon receipt of the written complaint and a copy of the written call for water, Division staff should seek to contact the other party(ies) by telephone and advise them of the complaint. In many instances, it may be possible to resolve the problem with no further action.

Step 5. Letter 1 - Notice of Alleged Violation

If unsuccessful in resolving the problem by direct telephone contact, send Letter 1 ***(Exhibit C)*** as soon as possible to the alleged violator. The letter will advise the alleged violator that the department has received a written complaint specifically addressing his/her appropriation of water. Although not meant to assert any conclusion regarding wrongdoing, the letter will notify the alleged violator that a field investigation will be conducted and that if a violation is occurring it must cease immediately. If they are found to be in violation of Montana water law, the department may assess a fine up to $1,000 per day for each day the violation takes place. It will further explain that the department may join with the complaining party in seeking injunctive relief. The letter will encourage the alleged violator to contact the department about trying to resolve the issue immediately. This letter may be sent first class; certified mail is not required.

Step 6. Field Investigation

Conduct a field investigation as soon as possible if the complaint remains unresolved. If the public health is in imminent danger, conduct the investigation within 2 days of receipt of a complaint. Document such matters as the time, date, location, nature of violation, amount of water involved, type of diversion, and person(s) allegedly causing the violation. Photographs, videos, flow records, water commissioner observations, and water rights records may be possible documentation sources. In the course of conducting the investigation, it is essential to acquire convincing documentation affirming that (a) the alleged violation prompted a valid complaint, and (b) there is a violation of the Montana Water Use Act. Prepare a report of the investigator's findings. Begin documenting the time and costs associated with enforcement.

Step 7. No Violation

If the field investigation does not verify a violation, send a second letter to both the alleged violator and the complainant advising them of the department's findings.

Step 8. Violation Verified

Whenever a field investigation affirms a violation, the regional manager must decide whether to issue an Order assessing a fine at this time.

If the violator acknowledges a violation of the Water Use Act and is willing to work with the department to correct the violation, issuing an Order may be postponed. However to provide documentation, send Letter #2 *(Exhibit D)* setting forth the results of the investigation, the course of action required to rectify the violation, and a deadline date for taking the corrective action. Further, notice shall be included where necessary that the department will follow up this notice with an investigation within 10 days to confirm whether the violator has corrected the violation. Letter #2 must be sent certified with return-receipt requested.

If the violator was not responsive to Letter #1 and is not cooperative in correcting the violation, the regional manager should decide in consultation with the regional office supervisor[1] whether to issue an Order for assessing a fine. The regional manager should send the investigation report and a recommendation to the regional office supervisor. The regional office supervisor shall consult and coordinate with the appropriate bureau chief and progaram staff, and with legal staff. If the decision is to issue an order proceed as outlined in section VI.

VI. ORDER FOR FINE AND NOTICE OF DEPARTMENT PETITION FOR JUDICIAL ENFORCEMENT

If the regional manager and the regional office supervisor concur that issuance of an Order is appropriate and will be enforced, the regional manager shall send Letter #3 ***(Exhibit E)***. Enclose the Order of the Department of Natural Resources and Conservation *(Exhibit F)* assessing a fine of $1000.00 per violation. The letter shall identify the specific violation, the required corrective action, the department finding on noncompliance, the date the fine commences, and notice of the department's intent to seek judicial enforcement of the fine. Further, advise the violator that an inspection of the violation

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[1]The Regional Manager is encouraged to seek advice from any department staff, e.g., Water Rights Bureau Chief, legal staff, at any point during the dispute resolution or enforcement process. Consultation with the Regional Office Supervisor is whether to proceed with issuing the Order.

will be conducted within ten days of receipt of the Order. If the violator takes corrective action before that time he or she should contact the regional office immediately so they can confirm it. Letter #3 must be mailed certified with return-receipt requested.

VII. PETITION TO DISTRICT COURT

When the violator does not respond to the Order or take the corrective action the department will seek judicial enforcement. The regional office must prepare a report documenting the follow-up investigation and the noncompliance. Enforcement action will be initiated with legal staff preparing a petition for temporary restraining order, preliminary injunction, or petition for enforcement of the fine. The petition shall include the following affidavits:

1) Affidavit of DNRC Field Investigator ***(Exhibit G)*** (prepared by the field investigator identifying what steps have been taken to obtain voluntary compliance with the Water Use Act, including a copy of the field investigation report),
2) DNRC Affidavit Regarding Enforcement Costs ***(Exhibit H)***, and, if this action against a violator was initiated by a complaint,
3) Affidavit of Injured Water User ***(Exhibit I)***

Legal staff will keep the regional office, bureau and Division staff advised of any court actions. Any additional information requested of the department by the court shall be gathered or prepared by the regional office or central bureau staff.

EXHIBIT A

ENFORCEMENT PRIORITY LEVELS	
LEVEL	SITUATION
LEVEL I	Public Health concerns Wasting water egregiously (surface and groundwater)
LEVEL II	Basin Closure violation Controlled Groundwater Area violation Appropriating water without a Permit Violation of Permit/Change Terms or Conditions Change without Authorization Appropriating without a Stock Permit (605)
LEVEL III	Appropriating without a Certificate (602) Exceeding a Claim or Certificate (602) Ignoring a call on a Claim
LEVEL IV	Property Damage

LEVEL I — Suspected violations receive immediate attention in the Regional Office. A field investigation is made within 48 hours of knowledge of alleged violation, whether it is by personal knowledge or written complaint. Immediate attention will be given to deciding whether an enforcement action can and should be pursued.

LEVEL II — Suspected violations receive immediate attention in the Regional Office. Investigation conducted as soon as possible after knowledge of alleged violation. Pursuit of an enforcement action will depend on time and resources.

LEVEL III — Regional Office will contact alleged violator and may conduct investigation. A letter advising violator will be sent. Enforcement action will be a low priority.

LEVEL IV — No DNRC effort will be expended.

EXHIBIT B

Date Received _____

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
WATER RESOURCES DIVISION

WATER USE COMPLAINT

Mail completed form to the Regional Office serving your county on the back page.

Name of Party Filing Complaint: _____
Address: _____
City _____, State _____ Phone _____

Name of Party Causing Harm: _____
Address: _____
City _____, State _____ Phone _____

1. Water right(s) being affected: (see DNRC records for your water right nos.)

_____

Source of water: _____
(USGS named stream, unnamed tributary to a USGS named stream, well, spring)

3. Location of **your** diversion or use: (**Attach** a scaled map or aerial photo showing the location of your diversion and use and the other appropriator's diversion and use.)

___¼___¼___¼ Sec. _____ Twp. ___ N/S Rge. ___ E W County _____

4. Location of the **other appropriator's** diversion or use:

___¼___¼___¼ Sec. _____ Twp. ___ N/S Rge. ___ E W County _____

5. Describe the nature of the problem, what the appropriator is doing and how it is affecting your use of water:

_____
_____
_____
_____
_____
_____
_____
_____

6. Have you made a call for your water or otherwise contacted the appropriator? ____YES ____NO

(In most instances, the DNRC will not act if the appropriator has not been contacted by the complainant.)

If Yes, what was the appropriator's response? (Attach a copy of your written "call for water".)

7. Do you have any suggestion for a mediated resolution?

8. Signature of Complainant: _____ Date _____

WATER RESOURCES REGIONAL OFFICES

Billings
1537 Avenue D, Suite 121
Billings, MT 59102
Phone: 657-2105
Fax: 245-2094
Serving: Big Horn, Carbon, Carter, Custer, Fallon, Powder River, Prairie, Rosebud, Stillwater, Sweetgrass, Treasure and Yellowstone Counties

Bozeman
601 Nickles Suite 2
Bozeman, MT 59715
Phone: 586-3136 or 586-3137
Serving: Gallatin, Madison, and Park Counties

Glasgow
839 First Avenue South
P.O. Box 1269
Glasgow, MT 59230
Phone: 228-2561
Fax: 228-8706
Serving: Daniels, Dawson, Garfield, McCone, Phillips, Richland, Roosevelt, Sheridan, Valley and, Wibaux Counties

Havre
1708 West Second Street
P.O. Box 1828
Havre, MT 59501
Phone: 265-5516 or 265-2225
Fax: 265-2225
Serving: Blaine, Chouteau, Glacier, Hill, Liberty, Pondera, Teton, and Toole Counties

Helena
1520 East Sixth Avenue
P.O. Box 202301
Helena, MT. 59620-2301
Phone: 444-6695
Fax: 444-0533
Serving: Beaverhead, Broadwater, Deer Lodge, Jefferson, Lewis and Clark, Powell, and Silver Bow Counties

Kalispell
3220 Highway 93 South
P.O. Box 860
Kalispell, MT 59903-0860
Phone: 752-2288
Serving: Flathead, Lake, Lincoln, and Sanders Counties

Lewistown
311 West Janeaux
P.O. Box 438
Lewistown, MT 59457
Phone: 538-7459 or 538-7012
Serving: Cascade, Fergus, Golden Valley, Judith Basin, Meagher, Musselshell, Petroleum, and Wheatland Counties

Missoula
Town & Country Shopping Center
1610 South 3rd Street West, Suite 103
P.O. Box 5004
Missoula, MT 59806
Phone: 721-4284
Serving: Granite, Mineral, Missoula, and Ravalli Counties

For Mailing, Use Post Office Box Number

EXHIBIT C

LETTER 1

Date

Dear _____ :

As indicated to you by telephone on _____, 199__, the Department of Natural Resources and Conservation has received a complaint from _____ alleging that you are [***facts of alleged violation*** *- the specific dates and locations of where the alleged violation is occurring.*]

Since this matter remains unresolved we need to learn more on the facts of the situation. The Department hereby gives you notice that an employee of the Department will be conducting an on-site investigation of the complaint in the next 10 days. In accordance with Mont. Code Ann. § 85-2-115 (1993) it may require entry upon your land to obtain the needed information.

If you are found to be in violation of the Water Use Act, you are subject to a civil fine in an amount not to exceed $1000 per violation, and each day of violation constitutes a separate violation. Mont. Code Ann. § 85-2-122(2) (1993). In addition, this Department has the authority under Mont. Code Ann. § 85-2-122(1) (1993) to take you to court to collect the fines imposed against you and ultimately has the authority pursuant to Mont. Code Ann. § 85-2-114(1993) to obtain a temporary restraining order and preliminary injunction to enjoin any unlawful activity.

Therefore, if the alleged activities are occurring they must cease immediately.

Please contact this office immediately if you have any information that can help resolve this matter prior to the investigation being conducted.

Sincerely,

Regional Manager
DNRC

cc: [DNRC Enforcement attorney]
[Helena Central designee]

bcc: [complainant and attorney]

EXHIBIT D

LETTER 2

Date

Dear _____ :

The Department has completed its investigation of the complaint from _____ and finds that you are *[**specify violation** - e.g. in violation of Mont. Code Ann. § 85-2-302, appropriating water without a water use permit].* This activity is a violation of the Water Use Act. Enclosed is a copy of our report.

You must cease this activity immediately and *[specify any other requirements - e.g. submit a correct and complete application for beneficial water use permit].* Within the next ten days we will be out again to confirm whether you continue to be in violation of the law. *[In addition, an Application for Beneficial Water Use Permit Form 600 must be filed on or before _____, 199__ (20 days from date)].*

If the Department finds you remain in violation of the law, the Department will assess you a $1000 fine for <u>each day</u> there is a violation. In addition, this Department has the authority under Mont. Code Ann. § 85-2-122(1) (1993) to take you to court to collect the fines imposed against you and ultimately has the authority pursuant to Mont. Code Ann. § 85-2-114(1993) to obtain a temporary restraining order and preliminary injunction to enjoin your unlawful activity.

Sincerely,

Regional Manager
DNRC

cc: [DNRC Enforcement attorney]
[Helena Central designee]

bcc: [complainant and attorney]

LETTER 3

(encloses Order)

Date

Dear _____ :

This letter concerns [***specify violation*** *- e.g. your appropriation of water without a permit out of Smith Creek*].

As you know, this department by letter of _____, 199__, demanded that you cease the illegal appropriation of water immediately. You were also informed of the fine that could be assessed under Mont. Code Ann. § 85-2-122 for noncompliance.

On _____, 199__, the _____ Regional Office visited [***specify what investigation showed*** *- e.g. your diversion and found it to be still diverting water at a rate of 65 GPM to the field north of your house. This activity is still in violation of Mont. Code Ann. § 85-2-302 which requires a water use permit before any appropriation is made, or whatever the violation is.*]

Pursuant to Mont. Code Ann. § 85-2-122 and the enclosed Order you are hereby assessed a fine of $1,000 per day for each day your illegal diversion continues commencing on [*date*]. Each day of violation constitutes a separate offense. Nonpayment of the assessed fine to the Department will be enforced for collection in the appropriate district court.

Contact this office immediately upon ceasing the appropriation. This situation will be monitored closely. Pursuant to Mont. Code Ann. § 85-2-115 your diversion will be reinspected after your receipt of this Order to confirm your compliance with the Order.

Sincerely,

Regional Manager
DNRC

cc: [DNRC Enforcement attorney]
[Helena Central designee]

bcc: [complainant and attorney]

ORDER

OF THE

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

TO: _____

_____

_____

Under authority vested in the Montana Department of Natural Resources and Conservation (DNRC), you were notified pursuant to Mont. Code Ann. §§ 85-2-112 and -122 (1993) that: _____

_____

_____

_____

_____

_____

_____

_____

_____

Montana law provides that any person who _____

_____

_____

_____

is subject to a civil penalty not to exceed $1000 per violation (and that each day of violation constitutes a separate violation). *The DNRC hereby assesses you a $1000 a day fine for each day of the violation described above commencing*

_____.

The DNRC will seek judicial enforcement of this Order and seek such other relief as may be necessary and appropriate pursuant to Mont. Code Ann. §§ 85-2-114 and -122 (1993).

DONE AND DATED THIS ____ DAY OF _____ 199___.

_____

DNRC Regional Office Manager

EXHIBIT G

TIM D. HALL
Special Assistant Attorney General
Department of Natural Resources and
Conservation
1520 East Sixth Avenue
Helena, MT 59620-2301
(406) 444-6699

COUNSEL FOR DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

IN THE DISTRICT COURT OF THE FIRST JUDICIAL DISTRICT
OF THE STATE OF MONTANA
IN AND FOR THE COUNTY OF LEWIS AND CLARK

* *

STATE OF MONTANA ex rel. DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION Petitioner,	)	Civil No.
v.	)	AFFIDAVIT OF DNRC FIELD INVESTIGATOR
Respondent.	)	

* *

_____, being duly sworn, swears the following to be true:

1. I am _____ [position and DNRC address].

2. I [background, education & training].

3. My duties at the DNRC include investigating complaints of violations of the Water Use Act. I have been in this position for ___ years.

4. [Set out facts of injured water user's complaint, the DNRC investigation and the investigator's conclusion. Attach a copy of the field investigation report. (Do not discuss here what happened as far as noncompliance after the letter and order were sent out - that is being covered in the succeeding paragraph.) Remember that the Judge is busy, knows nothing about the case, and wants to come up to speed on the facts as quickly as possible, so write what happened in the clearest, most concise manner possible.]

5. Pursuant to Mont. Code Ann. § 85-2-114 (4) (1993):

> [t]he department must attempt to obtain voluntary compliance through warning, conference, or any other appropriate means before petitioning the district court....

6. The DNRC attempted to obtain voluntary compliance by [set out what was done. Attach a copy of any letters sent to the violator. Describe what the violator did or did not do after their receipt of the DNRC warning letter].

7. Since voluntary compliance was not successful, the DNRC presented [the violator] with a DNRC Order dated ordering them to [describe it]. [Attach a copy of the DNRC Order].

8. Compliance is not taking place, and the Montana Water Use Act continues to be violated.

9. The DNRC seeks to obtain a civil penalty for the violation of the Water Use Act described above. Mont. Code Ann. § 85-2-122 (2) (1993) provides:

> A person who violates or refuses or neglects to comply with the provisions of 85-2-114, any **order of the department**, or any rule of the board is subject to a civil penalty not to exceed $1000 per violation. Each day of violation constitutes a separate violation.

(emphasis added).

10. The DNRC as of the date of this affidavit seeks a civil penalty of $_____ (_____ thousand dollars), and seeks an additional $1000 a day for each additional day's violation between today and the date of hearing or decision in this matter.

11. This enforcement and penalty action was brought against [violator] only after careful investigation and bona fide attempts to obtain voluntary compliance.

FURTHER AFFIANT SAYETH NOT.

DONE AND DATED THIS ____ DAY OF ____ 1994.

_____
[Name & Signature of DNRC employee]

Subscribed and sworn to me this ___ day of _____, 199__, by the above-named _____, known by me to be the person named as the affiant in the above affidavit.

NOTARY SEAL

_____
NOTARY PUBLIC for the State of Montana
Residing at Helena, Montana
My Commission Expires _____

[IF THE DNRC FIELD INVESTIGATOR IS NOT THE SAME PERSON BOTH DOING THE INVESTIGATION AND THE LETTER WRITING, AN ALTERNATIVE TO THE ABOVE AFFIDAVIT WOULD BE TO HAVE:

1) an affidavit of the investigator concerning his or her investigation, and
2) an affidavit of the Regional Manager or whoever sent out the DNRC enforcement letter and Order.

A DRAFT OF THIS SHOULD ALWAYS BE FAXED OR SENT E-MAIL TO THE DNRC LEGAL STAFF BEFORE BEING FINALIZED.]

TIM D. HALL
Special Assistant Attorney General
Department of Natural Resources and
Conservation
1520 East Sixth Avenue
Helena, MT 59620-2301
(406) 444-6699

COUNSEL FOR DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

IN THE DISTRICT COURT OF THE FIRST JUDICIAL DISTRICT
OF THE STATE OF MONTANA
IN AND FOR THE COUNTY OF LEWIS AND CLARK

* *

STATE OF MONTANA ex rel. DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION Petitioner, v. Respondent.	)	Civil No. DNRC AFFIDAVIT REGARDING ENFORCEMENT COSTS

* *

_____, being duly sworn, swears the following to be true:

1. I am _____ [position and DNRC address].

2. My duties at the DNRC include collecting and verifying information regarding the amount of time spent by DNRC employees in enforcement actions.

3. For the above-entitled case, I requested from each DNRC employee an accounting of the time they spent pursuing the enforcement of the Water Use Act. I

then took the amount of time spent by each respective employee times the amount of their hourly wage on file with the DNRC payroll technician. Finally, I figured the total amount expended by the DNRC by adding the dollar amounts determined for each employee as set out below:

DNRC TIMESHEET ON ENFORCEMENT ACTIVITIES

Date	Case	DNRC Employee	Time Expended	$/hour

Subtotal _____

Admin. costs @ x % _____

TOTAL _____

The enforcement of the Water Use Act in this case cost the taxpayers of the

State of Montana _____. The DNRC seeks a civil penalty pursuant to Mont. Code Ann. § 85-2-122 (1993). Fines collected under that statute will be deposited in the water right appropriation account in the state special revenue fund of the state treasury pursuant to Mont. Code Ann. § 85-2-318 (1993) to help pay the expenses incurred by the DNRC for administering and enforcing part 1, part 3, part 4 and part 5 of chapter 2, Title 85, and Title 37, chapter 43.

FURTHER AFFIANT SAYETH NOT.

DONE AND DATED THIS ____ DAY OF ____ 1994.

_____
[Name & Signature of DNRC employee]

Subscribed and sworn to me this ___ day of _____, 199__, by the above-named _____, known by me to be the person named as the affiant in the above affidavit.

NOTARY SEAL

_____
NOTARY PUBLIC for the State of Montana
Residing at Helena, Montana
My Commission Expires _____

EXHIBIT I

TIM D. HALL
Special Assistant Attorney General
Department of Natural Resources and
Conservation
1520 East Sixth Avenue
Helena, MT 59620-2301
(406) 444-6699

COUNSEL FOR DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

IN THE DISTRICT COURT OF THE FIRST JUDICIAL DISTRICT
OF THE STATE OF MONTANA
IN AND FOR THE COUNTY OF LEWIS AND CLARK

* *

STATE OF MONTANA ex rel. DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION Petitioner,	)	Civil No.
v.	)	AFFIDAVIT
	)	OF INJURED WATER USER
Respondent.	)	

* *

_____, being duly sworn, on oath says as follows:

1. I live at _____.

2. I have a water right in [X Creek or whatever, Water Right Claim No. ___ or Permit No. ___] that is being adversely affected by the actions of _____ [who either does not have a water right on record with the DNRC, or who does and it is Water Right Claim No. or Permit No. ___].

3. [Set out in numbered paragraphs for the complainant to sign after legal review the facts of their complaint regarding the violation of their water rights or the Water Use Act by whomever a TRO is being sought against. (The affadavit should clearly convey to a judge who has no knowledge of the facts exactly what has occurred and when - **also, any irreparable damages being suffered should be clearly spelled out**). Also attach a copy of their signed complaint. There should be no major discrepancies between the signed complaint and the subsequent affidavit, so make sure when the complaint is first filed that all the facts are straight. See Department policy requiring a signed complaint before the DNRC will go to court].

FURTHER AFFIANT SAYETH NOT.

DONE AND DATED THIS ____ DAY OF ____ 1994.

[A DRAFT OF THIS SHOULD ALWAYS BE REVIEWED BY THE DNRC LEGAL STAFF BEFORE BEING FINALIZED].

_____
[Name & Signature]

Subscribed and sworn to me this ___ day of _____, 199__, by the above-named _____, known by me to be the person named as the affiant in the above affidavit.

_____

NOTARY SEAL

NOTARY PUBLIC for the State of Montana
Residing at Helena, Montana
My Commission Expires _____

Code Ann. § 85-2-122 (1993). Fines collected under that statute will be deposited in the water right appropriation account in the state special revenue fund of the state treasury pursuant to Mont. Code Ann. § 85-2-318 (1993) to help pay the expenses incurred by the DNRC for administering and enforcing part 1, part 3, part 4 and part 5 of chapter 2, Title 85, and Title 37, chapter 43.

FURTHER AFFIANT SAYETH NOT.

DONE AND DATED THIS ____ DAY OF ____ 1994.

_____
[Name & Signature of DNRC employee]

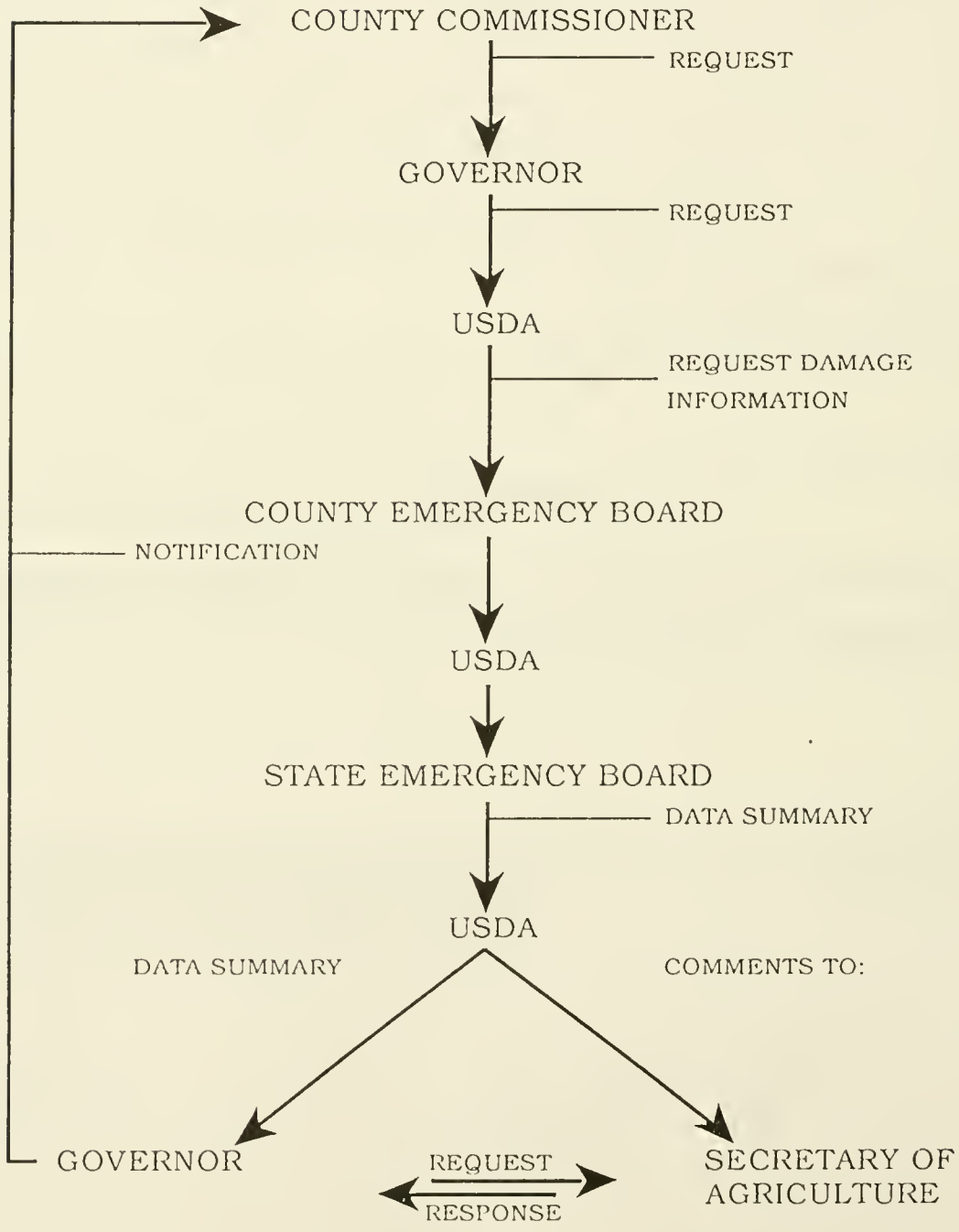
Subscribed and sworn to me this ___ day of _____, 199__, by the above-named _____, known by me to be the person named as the affiant in the above affidavit.

NOTARY SEAL

_____
NOTARY PUBLIC for the State of Montana
Residing at Helena, Montana
My Commission Expires _____

APPENDIX E:
FEDERAL (USDA) NATURAL DISASTER DETERMINATION

NATURAL DISASTER DETERMINATION FLOW CHART (DROUGHT)



USDA
NATURAL DISASTER
DETERMINATION PROCESS

DES will coordinate the application process and implementation procedures for USDA Natural Disaster Determinations, assist in formulating any executive orders or proclamations, and act as liaison with other agencies and organizations in developing the natural disaster process. The current process is as follows:

a) The county commissioners must request the governor to initiate the drought declaration process in writing;

b) DES coordinates with the governor to request federal assistance through the USDA Montana office;

c) DES recommends and prepares draft correspondence for the governor to notify the county commissioners as to the status of their request during the entire process;

d) The USDA requests damage assessment information from the local CFSA and NRCS offices in the affected areas;

e) The damage assessment information is returned to the USDA and forwarded to the State Emergency Board (SEB) for assessment and review;

f) The SEB returns their recommendation to the USDA. The USDA forwards the final information with their recommendation to DES; comments are sent to the secretary of agriculture;

g) DES prepares a packet for the governor including a draft letter for submission to the secretary of agriculture requesting Natural Disaster Determination;

h) The governor sends the packet to the secretary of agriculture. The secretary of agriculture processes all information and sends a determination regarding Natural Disaster Designation to the governor;

i) DES then prepares draft correspondence for the governor notifying the involved counties as to the final status of their request. Completion of the entire process can take up to six months (see Appendix E).

Producers in those counties designated as drought areas are eligible for assistance from CFSA. According to the Emergency Agricultural Credit Act of 1984, producers in contiguous counties are eligible to apply for the same assistance from CFSA.

APPENDIX F
DROUGHT STATUTE
MONTANA CODES ANNOTATED

2-15-3308. Drought advisory committee. (1) There is a drought advisory committee allocated to the department of natural resources and conservation for administrative purposes only as provided in 2-15-121.

(2) The drought advisory committee is chaired by a representative of the governor and consists of representatives of the departments of natural resources and conservation; agriculture; commerce; fish, wildlife, and parks; military affairs; health and environmental sciences; state lands; and livestock. The governor's representative must be appointed by the governor, and the representative of each department must be appointed by the head of that department. Additional, nonvoting members who represent drought-affected federal and local government agencies and public and private interests may also be appointed by the governor.

(3) The drought advisory committee shall:

(a) with the approval of the governor, develop and implement a state drought plan;

(b) review and report drought monitoring information to the public;

(c) coordinate timely drought impact assessments;

(d) identify areas of the state with a high probability of drought and target reporting and assistance efforts to those areas;

(e) upon request, assist in organizing local drought advisory committees for the areas identified under subsection (3)(d);

(f) request state agency staff to provide technical assistance to local drought advisory committees; and

(g) promote ideas and activities for groups and individuals to consider that may reduce drought vulnerability.

(4) The department of natural resources and conservation shall provide staff assistance to the drought advisory committee.

(5) The drought advisory committee shall meet, at a minimum, on or around the 15th day of the months of October and February of each year to assess moisture conditions and, as appropriate, begin preparations for drought mitigation.

(6) By March 15th of each year, the drought advisory committee shall submit a report to the governor describing the potential for drought in the coming year. If the potential for drought merits additional activity by the drought advisory committee, the report must also describe:

(a) activities to be taken by the drought advisory committee for informing the public about the potential for drought;

(b) a schedule for completing activities;

(c) geographic areas for which the creation of local drought advisory committees will be suggested to local governments and citizens; and

(d) requests for the use of any available state resources that may be necessary to prevent or minimize drought impacts.

(7) Nothing in this section is intended to remove or interfere with the duties and responsibilities of the governor or the division of disaster and emergency services for disaster coordination and emergency response, as provided in Title 10, chapter 3, part 1. The duties and responsibilities of the drought advisory committee supplement and are consistent with those of the division of disaster and emergency services for drought planning, preparation, coordination, and mitigation.

APPENDIX G
OPERATIONS MANUAL
FOR
LOCAL DROUGHT MANAGEMENT

I. INTRODUCTION

Following the drought year of 1988, Montanans began to reconsider how to respond to drought and its impacts. The issue of drought management was identified for further study by the Montana Legislative Water Policy Committee. The state water plan process was selected as the best approach to developing a strategy for state and local response. From the beginning of the process, it was clear the state needed to develop a strategy for dealing with drought before drought situations became acute.

A steering committee comprising representatives of water user groups and water management agencies identified issues, considered options, and made recommendations to address the effects of drought in advance of its onset. An effective response system would require coordination of local, state, and federal agencies to administer programs for drought monitoring, impact assessment, assistance, education, and mitigation. The committee recommended that the state drought advisory committee, upon the request of a county, should assist communities in organizing local drought advisory committees and provide necessary support and assistance. That recommendation stated, in part:

> *"Committee membership should be comprised of state and local government officials, including county disaster services coordinators and conservation district supervisors; local water user groups, including dryland and irrigated agriculture, municipal and rural water suppliers, energy producers, mining and mineral processing, forest products, tourism, recreationists and recreation-based businesses, and interested citizens."*

In 1991, the Montana Legislature passed House Bill 537, which established the Montana Drought Advisory Committee (DAC) and defined its membership and responsibilities. Two related duties listed by the statute are:

> (3)(d) identify areas of the state with a high probability of drought and target reporting and assistance efforts to those areas; and
>
> (e) upon request, assist in organizing local drought advisory committees for the areas identified under subsection (3)(d). 2-15-3308 MCA (1991).

The statute called for a "report to the governor describing the potential for drought" to be released by March 15th of each year. The DAC would use the report to identify the regions of the state where drought conditions appeared. In 1992, DAC Chairperson Lt. Governor Dennis Rehberg issued a press release, on behalf of the DAC and Governor Stephens, encouraging local officials in these areas to form local drought advisory committees (LDACs):

> *"Local planning involving local people is the only way to develop a successful response to any drought related water shortages which may occur in Montana this year. We can't and we won't dictate solutions from Helena. What we will do is help local planners with information and any resources we have available to make their local plans moreeffective."*

In 1992, over 30 counties convened LDACs to identify areas of potential water supply problems and develop voluntary actions that water users could employ to prevent these problems before they could occur.

In 1993, a survey was developed to evaluate the effectiveness of LDACs for all 56 counties in the state. The survey results indicated that in counties that were affected by drought where an LDAC had been formed, over 95 percent of those surveyed thought that the meetings were informative, that they would participate on LDACs in the future, and that the LDAC provided benefits to the people of their community.

During drought the DAC provides a variety of information to LDACs. This local drought planning operations manual includes information that is tailored to the types of problems and impacts most commonly encountered during drought.

II. MUNICIPAL, PRIVATE, AND PUBLIC WATER SYSTEMS

A. Municipal Water Supplies

The Montana Department of Environmental Quality (DEQ) is responsible for monitoring the availability of municipal water supplies for communities. Operators of municipal water delivery systems are licensed by DEQ and are required to attend workshops and training seminars periodically to maintain and improve managerial expertise. Operators sample municipal water supplies on a regular basis and submit the samples to DEQ to test water purity and compliance with state and federal drinking water standards.

In communities using surface water for municipal supplies, drought conditions can cause impurities to violate drinking water standards. In communities that depend on groundwater for municipal water supplies, drought can cause the rate of use to exceed the rate of recharge, resulting in a net annual decline in aquifer levels. This situation can change groundwater quality necessitating measures such as water treatment to meet standards. Monitoring activities are increased during drought periods with particular attention to communities with a history of water quality problems.

Drought may make it difficult for municipalities and individuals to obtain enough potable water, possibly resulting in significant impacts on public health. Increasing withdrawals from surface sources to satisfy demands for domestic, irrigation and industrial water users may damage aquatic life. Discharge of sewage and other wastes at low stream flows can damage aquatic resources and threaten public health. For these reasons, DEQ plays a role in water management during droughts in Montana. The following information summarizes these responsibilities.

B. Private Water Supplies

1. Drought impacts

Well-constructed private water supplies are unlikely to be affected by drought conditions. Unfortunately, many private supplies are not properly constructed. They rely on surface supplies such as *pipe in the lake* systems. Some private systems rely on springs, or shallow aquifers that may be affected by drought.

2. Affected supplies

DEQ has no way, other than voluntary reporting, of determining which private water supplies may be affected by drought.

3. Department responses

Owners of private water supplies will usually be responsible for securing alternate sources of water during drought conditions. Information about the sanitary protection of potable water will be provided to individuals upon request and to the public through news releases.

C. Public Water Supplies

1. Drought impacts

The impact of a drought on public water supplies depends, to some degree, on the source of supply. Supplies fed by small surface sources or groundwater derived from such sources are most vulnerable to drought. DEQ, The Army Corps of Engineers, and DNRC all have special emergency programs to supply communities with potable drinking water.

2. Supplies likely to be affected

DEQ can determine which supplies in an area are most susceptible to impairment. Information stored in various files and on the state computer system allow DEQ to determine the source(s) of water for each of approximately 720 community systems in Montana. The systems are classified into one of these categories; surface water systems, groundwater systems and those which use both surface and groundwater.

3. Capability of water systems to withstand drought

a. Surface Water Systems

Information concerning surface water flows and reservoir water levels is obtained from the United States Geological Survey (USGS), the Montana Department of Natural Resources and Conservation (DNRC), the Montana Department of Fish, Wildlife and Parks (DFWP), public water supply systems, and DEQ records. This information is used to determine which systems will be most affected by drought.

b. Groundwater Systems

Communities with groundwater systems are encouraged to monitor levels to determine if they are declining. DEQ also obtains information on groundwater levels from the USGS, the Montana Bureau of Mines and Geology, and groundwater users.

The most vulnerable groundwater systems are monitored by DEQ to determine their ability to withstand drought conditions. Assessments include information about alternate water sources for the system, the possibility of implementing water use restrictions, and potential health impacts of water shortages.

4. DEQ response

a. Cooperation

DEQ will work with public water supplies, local health departments and other agencies to minimize the impact of drought on public health. DEQ will ensure the provision of potable water to the citizens of impacted areas.

b. Services provided by DEQ:

1. Information on water conservation techniques to make the best use of a limited resource

2. Advice on the use of alternate sources and options for obtaining additional water

3. Treatment alternatives to ensure safe water

4. Assistance in preparing press releases and notices

5. Cooperative efforts with funding agencies to find funds for emergency and/or long term solutions

6. When necessary, DEQ and Disaster and Emergency Services, may rely on the state's emergency water disinfection and filtration units to provide a temporary source of potable water.

b. Legal responsibility

If there is an imminent threat to public health, the DEQ may require a public water supply to take special measures to protect the health of its citizens (ARM 16.20.277). Those measures would most often be the implementation of strict water use restrictions to maintain pressure in the distribution system and the provision of adequate water for domestic uses. Where contamination is a risk, boil orders or health advisories may be issued.

D. Department Contacts

Listed below are phone numbers of DEQ sections with drought responsibilities:

Response Area	Phone No.
Public Water Supply	444-4549
Surface Water Quality	444-2406
Groundwater Quality	444-2406
Waste Discharges	444-2406

III. FIRE SUPPRESSION

A. Conservation Reserve Program (CRP) Lands

Conservation Reserve Program lands represent a large source of potential wildfire fuels during periods of drought. USDA will only release CRP lands for grazing under extreme circumstances. When CRP land is released the program participant must reimburse the government for the value of the feed. Most producers elect to leave the land in the program rather than pay the value of the forage. Besides the responsibility to maintain the idle land for weed control, producers can construct fire breaks to stem the advance of a potential wildfire. It would be worthwhile for a community to inventory CRP lands assess the implications and risks of a large range fire and who would potentially be affected.

The Montana Department of Natural Resources and Conservation (DNRC) urges communities to develop and coordinate a fire response plan with federal, state, and local officials for wildfires that cross jurisdictional boundaries. This process may require a memorandum of understanding that addresses firefighting resources and responsibilities.

DNRC is responsible for the prevention and suppression of wildland fires on state-owned lands. Specifically, the Montana Drought Response Plan requires DNRC to identify those areas of extreme fire danger due to drought conditions and provide daily assessments of the capabilities, resources, and sources of assistance available both within and outside the agency.

B. Wildland Fire Danger

All state and federal wildland firefighting organizations use the National Fire Danger Rating System to assess and monitor the conditions contributing to extreme fire danger. The fire danger rating system is composed of several indices which describe the probability of a fire start, the expected intensity of the fire, and the difficulty to be expected in control of the fire.
These indices are derived and updated daily from current weather and fuel moisture information gathered at over 90 reporting stations in Montana. The reporting stations enter their local information into a fire computer system that provides DNRC with current fire danger information in almost any location in the state. This information, coupled with two daily fire weather forecasts from the National Weather Service, provides DNRC with the information necessary to plan and react to wildfire occurrences.

Besides monitoring the conditions which contribute to fire occurrences, DNRC also monitors the availability and use of personnel and equipment within DNRCand other wildland firefighting organizations. A daily situation report on the use and availability of all firefighting equipment and personnel is summarized by DNRC and provided to all wildland firefighting organizations.

Most of DNRC's fire suppression planning efforts are centered in Missoula at the Fire Coordination Center. DNRC's field offices provide specific fire information on a regional basis. A list of DNRC offices and phone numbers is attached.

C. Drought Impacts On State-Owned Lands

DNRC leases most of the 5 million acres of state-owned land it manages for grazing and agriculture. Extended periods of drought reduce the income- producing potential of these lands for the school trust fund and contribute to a long term decline in productivity.

IV. FIRE RESPONSE SYSTEM

DNRC is responsible for minimizing the impact of wildfires through the wildland fire prevention, pre-suppression, and suppression programs and activities it conducts. DNRC is charged by statute with sound management of the school trust land resources. This is accomplished through field activities intended to reducing drought related impacts on state-owned lands wherever possible.

A. Prevention

Before the start of the fire season, DNRC and other wildland fire fighting organizations, initiate a plan to reduce wildfires. If drought conditions persist, the plan is updated and active fire prevention activities initiated. Some of these include:

1. Use of press releases to notify the public of fire danger.

2. Delineation of high hazard areas and patrolling, posting, and restricting access into these areas.

3. Cancellation of open burning permits and requesting the public to voluntarily cease operations involving the use of fire.

4. Increasing cooperation and coordination with other fire protection agencies and county governments.

B. Pre-Suppression

As drought and fire conditions worsen, DNRC will initiate an increasingly active fire detection and response system aimed at rapid detection and deployment of firefighting assets. Increasing the frequency and duration of aerial detection flights and pre-positioning personnel and equipment to high hazard areas helps reduce the response time to attack fires. The preparedness and readiness of DNRC personnel and equipment is stepped up as conditions worsen.

C. Suppression

Suppression activities include the initial attack, containment, control, and extinguishing of a fire. DNRC uses all the resources at its disposal to suppress the impact of wildfire.

V. RESTRICTIONS ON ACTIVITIES

A. DNRC Policy

DNRC may, designate areas of high fire hazard and request all persons, firms, or corporations present or engaged in any activity in the areas to voluntarily cease operations or to adjust working hours to less critical periods of the day. In the event such a request is refused, DNRC can order compliance.

B. Closure Of Areas Due To Fire Danger

When 1) drought conditions exceed the normal seasonal buildup, endanger life and property, and are predicted to continue; 2) it is questionable if local forces will be able to cope with additional fires, and 3) the county has initiated active fire prevention, detection, pre-suppression and suppression programs, a fire closure may be instituted to reduce or prevent human and other resources losses.

Under 87-3-106 MCA the Governor, upon recommendation DNRC, may close an area or county to trespass because of fire danger, and that area is automatically closed to hunting, fishing, etc., and remains closed as long as the fire closure remains in effect. Closures are very hard to administer and, therefore, careful consideration must be given to all aspects of a closure prior to requesting one. A careful analysis of fire conditions and weather trends, followed by close coordination between all agencies and strong local actions to enforce the closure, are necessities.

Requests for a fire closure must come from the governing body of the county. Requests received from other sources will be referred back to the County Commissioners for their recommendation. This request should be submitted to DNRC for its consideration prior to being forwarded to the Governor.

VI. DROUGHT RELATED IMPACTS ON STATE OWNED LANDS

A. DNRC Policy

DNRC assists lessees of state-owned land to solve drought related problems on state lands. Technical assistance and cost share assistance is available for improvements on state-owned lands. Resource development cost share assistance on new stockwater developments, range renovation projects and irrigation systems is normally available to state lessees on approved projects.

B. Contacts For Drought Response Information

Contact	Phone #
1) Dept of Natural Resources	444-2074
2) DNRC Fire Coordination Center	542-4290

Other contacts for regional information are as follows:

Office	Location	Phone
Northwestern Land Office	Kalispell	542-7994
Southwestern Land Office	Missoula	542-4200
Central Land Office	Helena	444-3633
Northeastern Land Office	Lewistown	538-5989
Southern Land Office	Billings	259-3264
Eastern Land Office	Miles City	232-2034

U.S. Forest Service Fire Information:

National Forest	Phone #
Bitterroot	363-3131
Clearwater	(208) 476-4541
Custer	657-6600
Deer Lodge	683-3975
Flathead	755-5401
Gallatin	587-6719
Helena	449-5201, 449-5475
Kootenai	293-6511
Lewis and Clark	791-7707, 791-7751
Lolo	329-3857

VII. AGRICULTURE

Drought affects all aspects of Montana agriculture: dryland and irrigated farming, livestock, and the many local service economies that depend on its stability and support. Assistance is available in many forms from a variety of state and federal agencies. Inquiries about assistance should be directed to local county USDA and state agency offices. The Montana Department of Agriculture works closely with USDA in coordinating data collection, and providing financial and technical assistance to those producers affected by drought. Most short-term financial assistance for drought impacts is available through the USDA. Long-term assistance is available from DNRC, through water development grants and loans, and the NRCS (USDA) for technical assistance in designing farm water projects.

The Montana Drought Response Plan contains useful information for those seeking all forms of assistance (See Federal and State Agencies section and state agency annexes in the Appendix). Irrigation comprises about 97 percent of all fresh water use in Montana. In drought years, surface water supplies are usually inadequate to meet the demands of all irrigators. The prior appropriation doctrine governs the use of surface water in Montana. The Missouri River basin is currently in the process of adjudication to determine the ownership of water rights. The Yellowstone River basin has been adjudicated, so questions of allocation are more easily resolved for that river basin. The Department of Agriculture recommends the following objectives:

1) Additional water storage facilities for water supplies should be developed and available to reduce drought impacts.

2) Existing water storage facilities should be enhanced to meet irrigation needs and augment instream flows.

3) Cooperation between water users should be developed to augment instream flows including regulated releases from storage facilities.

The following program phone numbers are commonly requested:

1) Livestock Operations - Call Hay/Pasture Hotline @ (406) 444-2402 or local county CFSA office for stockwater well assistance

2) Federal Assistance Programs - Contact local CFSA office

3) Internal Revenue Service Tax Considerations - Farmers Tax Guide, Publication # 225 from IRS Helena @ (406) 449-5250 or 1-800-829-1040

4) Permits Required for Water Use Activities - Contact local Natural Resource Conservation Service (NRCS) office or regional DNRC office.

5) Local Water Conservation - Contact county NRCS office or DNRC regional office (DNRC Helena 444-6601), Montana Watercourse (406) 994-6671.

9) Dryland Agriculture - Local CFSA office or MT Dept. Ag. 444-2402.

* see also Department of Agriculture and Livestock annexes to state drought response plan and list of agricultural publications at end of this guide.

Agriculture Phone Numbers

Department of Agriculture -	(406) 444-3144
Agriculture Electronic Bulletin Board-	1-800-962-1729
Department of Livestock -	(406) 444-2043
Montana Livestock Crimestoppers -	1-800-647-7464
Hay/Pasture Hot-line -	(406) 444-2402

VIII. WATER SUPPLY INFORMATION

Water supply and soil moisture data are available from several sources:

1) Water supply and soil moisture maps (Surface Water Supply Index and Palmer Drought Severity Index), climate data, streamflow, drought impact assessments - Montana State Library, Natural Resource Information System (NRIS) through State Electronic Bulletin Board: 1-800-962-1729 or if calling from Helena: 444-5648. or Internet World-Wide Web: http:/nris.msl.mt.gov

2) Soil moisture - MT Agricultural Statistics Service, Helena (406) 449-5303 or 1-800-835-2612; DNRC @ 444-6637; or a local NRCS office.

3) Streamflow - Current, and historic and monthly averages - U.S. Geological Survey, Helena (406) 449-5263. Internet address: http://wwwdmthln.cr.usgs.gov/ for current and historical streamflow data, by county or river basin.

4) Reservoirs - U.S. Bureau of Reclamation, Billings 1-800-775-0868; Montana Power Company 1-800-424-5555; U.S. Army Corps (406) 444-6670.

5) State-owned reservoirs - DNRC, (Helena) (406) 444-6646.

6) State Drought Advisory Committee - DNRC (Helena) (406) 444-6637

Water Conservation Information:

1) A Catalog of Water Conservation Resources (1993) - The Montana Watercourse, Montana State University (406) 994-6671.

2) County Extension Service - See local directory

IX. FISHERIES AND TOURISM

Drought can cause serious impacts to the state's fisheries during periods of reduced streamflow. During low streamflow water temperatures rise, reducing available dissolved oxygen needed by fish, and concentrating suspended sediments and toxic substances. Low streamflow also reduces cover for young fish increasing predation by larger fish. Many Montana communities derive significant local revenues from the fishing-related dusiness and the secondary commerce it generates.

LDACs can provide a forum for local tourism-related business and agricultural water users to discuss streamflow issues. The local DFWP biologist can be helpful in identifying minimum streamflow levels necessary to sustain the local fisheries. These low figures can be used as target objectives in a cooperative local effort to mitigate fish kills in the short-term. Arrangements have been made in the past to scale back irrigation withdrawals for as little as a week during which time streamflow can recover, reaching acceptable levels and averting fish kills.

If a river basin planning committee is operational in the basin, LDACs can coordinate instream flow mitigation with the basin committee. LDACs can request assistance from the Drought Advisory Committee by contacting DNRC's Water Resources Division @ (406) 444-6637 or a DNRC regional office.

Drought conditions also can affect local economies by reducing tourism. State and federal lands may have uses restricted during fire season. LDACs can keep the Montana Department of Commerce informed of restricted travel due to fire or the presence and of special fishing regulations for drought so that Commerce can inform callers on its out-of-state toll-free tourism hotline.

Phone Numbers For Fishery Or Tourism Issues

Fisheries - Contact MT DFWP regional office or Fisheries Division @ (406) 444-2449 (Helena).
Tourism and recreation - Montana Department of Commerce @ (406) 444-2654

X. LOCAL MEDIA

A. Local Drought Committee Meetings

It is important for communities to be notified of scheduled local drought committee meetings to ensure that all concerned citizens will have an opportunity to be heard and to hear the information provided by state, local, and federal agencies and other participants. It is advisable to place a notice in the local press and a spot on local radio at least three days before to the meeting.

Local public service announcements can complement the Governor's messages with a message tailored to address issues of local concern. The Such announcements can offer an opportunity for local officials to bring attention to local water conservation ordinances in effect, upcoming local drought meetings, and a variety of other information.

B. Sample Drought PSA

The public service announcement below has been used successfully in Montana to promote water conservation and drought awareness. It is one minute long and can, in many cases be recorded over the phone by local radio stations. Local stations are usually willing to broadcast announcements free of charge as a service to their communities.

> Please do your part to conserve water to help Montana get through this summer without unnecessary hardship due to low water supplies. This is (*announcer's name and position*) of the Montana *county* drought advisory committee or *county commissioner* with some tips on how to save water. Use as little water as possible to get the job done. Check irrigation systems for leaks and efficiency. Try to apply water sparingly, avoiding sprinkling on hot, windy days. Don't run showers and faucets for long periods of time. Use plastic bottles or bricks in toilet tanks to reduce the amount of water to flush.
>
> Water your lawn only when necessary, and in the morning or evening , when the sun and wind won't evaporate the water before it hits the grass. Make sure that you're not watering the sidewalk or street when you turn on your sprinkler. Remember, a deep soaking encourages a deeper root system, which doesn't need frequent watering. Use a broom and not the hose to clean sidewalks and streets. Check for leaks in pipes, hoses, faucets, and couplings. Only run the dish and clothes washers when you have a full load. Following these tips will help you do your part to get Montana through this dry period. For more information, call _____ @ _____.

Information about local sources of drought-related information can be added to the end of the PSA.

XI. MEDIATION, FACILITATION, DISPUTE RESOLUTION SERVICES

The Montana Consensus Council is a service offered by the Governors office focusing on short and long-term solutions to natural resource issues. Phone 444-2075 for more information.

Agriculture Publications

Cattle Management During Drought, Roger Brownson
Beef Cattle Specialist, Montana State University Extension

Emergency Rations for Wintering Beef Cows, Roger Brownson
Beef Cattle Specialist, Montana State University Extension

Hay Buying Tips, Rodney Kott and Roger Brownson
Sheep Specialist and Cattle Specialist, respectively
Montana State University Extension

Dealing with Drought on Range, John Lacey
Range Management Specialist, Montana State University Extension

Substituting Grain for Hay in Wintering-Ewe Rations, Rodney Kott
Sheep Specialist, Montana State University Extension

Buying and Selling Livestock Due to Drought, Roger Brownson
Beef Cattle Specialist, Montana State University Extension

Tax Implications of Drought Sales of Livestock, Alan E. Baquet
Farm Management Specialist, Montana State University Extension

Feeding Value of Light Weight Barley, Rodney Kott and Roger Brownson
Sheep Specialist and Cattle Specialist, respectively
Montana State University Extension

Sheep Management During Drought, Rodney Kott,
Sheep Specialist, Montana State University Extension

Nitrates in Livestock Feeding: A Problem in Drought Conditions, Rodney Kott,
Sheep Specialist, Montana State University Extension

Cattle Feed Management in Drought, Roger Brownson
Beef Cattle Specialist, Montana State University Extension

Ammoniated Straw for Beef Cattle, Roger Brownson
Beef Cattle Specialist, Montana State University Extension

Reducing Drought Effects On Croplands In The West-Central Great Plains
USDA, Agriculture Information Bulletin Number 420, 6/79
Prepared by Science and Education Administration
Copies available from Montana DNRC 444-6637.

APPENDIX H:
DNRC WATER SUPPLY AND MOISTURE REPORT

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION

MARC RACICOT, GOVERNOR

LEE METCALF BUILDING
1520 EAST SIXTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-6699
TELEFAX NUMBER (406) 444-6721

PO BOX 202301
HELENA, MONTANA 59620-2301

MONTANA WATER SUPPLY AND MOISTURE CONDITION REPORT

Prepared for:

Governor's Drought Advisory Committee

By:

Bob Smith
Water Management Bureau
Water Resources Division

INTRODUCTION

This report is a tabular compilation of data from various agencies relating to current water supply conditions that may affect Montana during the ensuing months.

The purpose of the report is to summarize April 1995 water availability and moisture conditions and to provide an indication of the impact water availability will have on the upcoming agricultural growing season and other water-related sectors of Montana's economy.

Water-supply conditions have improved considerably within the past several weeks reducing the threat of impending drought. The Governor's Drought Advisory Committee (GDAC) did not meet in April 1995 as a result of the improved moisture conditions over most of Montana. Monitoring of water-supply conditions will continue and GDAC meetings will again be scheduled if conditions deteriorate to the point that meetings are warranted.

Montana is a state of diverse terrain over long distances, and different areas have varied spring water supply conditions. Some local drought advisory committees may not wish to suspend activities if drought conditions persist in their counties.

WEATHER SUMMARY FOR MARCH 1995

According to the National Weather Service (NWS) in Great Falls, precipitation during March 1995 was generally much above normal for the month except for northcentral Montana, and parts of central and nothwest Montana, where below normal precipitation was received at many stations. The already dry

northcentral Montana received the least precipitation, further increasing its moisture debt. Temperatures varied considerably during March, but averaged from 4 degrees below normal in central and north central Montana, to 4 degrees above normal in the southwest.

FORECAST

The extended precipitation and temperature outlook for Montana as of May 2, 1995 (provided by the National Weather Service) is as follows:

6-10 Day Outlook: The forecast through May 11, 1995 calls for below normal temperatures statewide accompanied by below normal precipitation west of the Continental Divide and slightly near normal precipitation east of the divide. *Normal May temperatures are: highs from 60 to 65 degrees and lows near 40 degrees Fahrenheit.*

30-Day Outlook: The forecast through May 1995 calls for normal temperatures and precipitation statewide.

90-Day Outlook: The forecast through July calls for normal temperatures and precipitation statewide. *Normal June temperatures are: highs from 70 to 75 degrees and lows of approximately 45 degrees Fahrenheit. Normal July temperatures are: highs from 80 to 85 degrees and lows of approximately 50 degrees Fahrenheit.*

SNOWPACK-MOUNTAIN PRECIPITATION

Several storms during the last week of March and the first ten days of April, 1995 have brought much needed precipitation and normal mountain snow accumulation to most of the state. As indicated in Appendix B and Table 1, the April 27,1995 snow accumulation is within the normal range (90 to 110 % of average snow water equivalents (SWE)) or higher in most of the representative basins. The lowest SWE, is the Lower Clark Fork River basin with 70% of average SWE, followed by the combined Sun, Teton and Marias River basins with 75 percent of average SWE. The highest SWE, and the only one in the "much above average" range (above 130 percent of average) is the Madison River basin with 138 percent of average SWE.

The rate of snowmelt runoff will likely play a crucial role in determining Montana water supply conditions over the upcoming months. Generally annual snowpack accumulation has peaked by mid April in Montana. It is, therefore, reasonable to be concerned about the water supply in the Clark Fork and Bitterroot river basins west of the Continental Divide, the Sun, Teton, and Marias basins in the Missouri River basin, and the St. Mary River in the Hudson Bay basin. (The St. Mary River provides supplemental water to the Milk River via inter basin transfer.) These basins, will be more dependent on timely spring and summer rainfall than basins with normal snowpack.

STREAMFLOW

Streamflows recorded at U.S. Geological Survey (USGS) stream-gaging stations at representative sites in Montana are summarized in Tables 2 and 2-A. Mean March flows varied greatly, from 247% of average for Middle Fork of Flathead River near West Glacier, to only 13% of average for the Milk River at Nashua. March 1995 stream flows were determined primarily by early runoff of snowmelt as affected by March temperatures and basin snowpack conditions, and reservoir operations.

RESERVOIR STATUS

U.S. Bureau of Reclamation Projects

Table 3 summarized USBR reservoirs contents and compares them to long-term average contents and contents at this time last year. Appendix C contains more complete records of storage at USBR (and other) reservoirs. Additional information for selected USBR projects follows.

Milk River Reservoirs

The combined storage of Milk River Project reservoirs as of April 1, 1995 was 77 percent of average April 1 storage. The current reservoir storage is only 56 percent of the storage at this time a year ago and is accompanied by similarly low snowpack accumulation.

Last year abundant carryover storage helped the Milk River Project avoid shortages in spite of low snowpack and a dry summer. It appears that the Project will be more dependent on additional snowpack accumulation and spring/summer precipitation events this year than in 1994 due to the reduced carryover storage in the reservoirs.

The St. Mary Canal began diverting water on March 28, 1995 and washed out at a newly constructed structure on April 3. The St. Mary Canal delivers supplemental water to the Upper Milk River from Sherburne Reservoir on the St. Mary River in the Hudson Bay Basin. According the USBR Reservoir and River Operation Branch, this will delay delivery of water to the Milk River Basin and further tighten the early season water supply.

Clark Canyon

April 1, 1995 storage at Clark Canyon reservoir was 143,100 acre-feet, an increase of 14,000 acre-feet from a month ago, and approximately 27,000 acre-feet less than a year ago.

Mountain snowpack above Clark Canyon is 123 percent of normal (about 80 percent higher than a year ago). The April-July inflow is expected to be 114 percent of normal, and no water shortages are expected during 1995.

Canyon Ferry

Canyon Ferry Reservoir storage as of April 1, 1995 was 100 percent of average after 101 percent of average March inflow to the reservoir. Snowpack in the Missouri River headwaters above Canyon Ferry is 118 percent of normal as indicated in Table 1.

Gibson

April 18, 1995 storage was 22,560 acre-feet, about 50 percent of average. This is about 80 feet below the top of the conservation pool and over 30 feet lower than reported at this time last year. Snowpack conditions above Gibson Reservoir are about 70 percent of average and about 5 percent lower than at this time last year. Late season snow accumulation or timely spring and summer precipitation may be necessary to avoid late season shortages in the Sun River Basin.

Gibson reservoir has approximately one-half the storage (47 percent) and about 80 percent of the basin snowpack as it had at this time last year, a year in which late season shortages occurred.

Hungry Horse

April 18, 1995 storage at Hungry Horse reservoir was 1,996,000 acre-feet, about 91 percent of average, at an elevation of 3,486 feet. This is about 44 feet below the top of the conservation pool and approximately 65 feet more than reported at this same time a year ago.

provide a minimum fish flow at the Columbia Falls gage. The current operating objective developed in coordination with Bonneville Power Administration, The Corps of Engineers, and National Marine Fishery Service is to keep headwater projects on minimum releases in an effort to store as much water as possible for spring and summer fish migrations. With this objective Hungry Horse is forecasted to be within 5 to 10 feet of full in July and not to be drafted lower than elevation 3,530 by August 31, 1995. It is possible, however, that these operation plans may change throughout the season to meet other multiple-use goals.

USBR Summary

April 1, 1995 storage for Montana USBR reservoirs ranged from 123 percent of average at Lake Elwell (Tiber Dam), on the Marias River, to only 53 percent of average at Gibson Reservoir (Sun River Project) and 60 percent of average at Nelson Reservoir on the Milk River Project.

March 1995 inflow to most USBR reservoirs was near normal for the month. Exceptions were Fresno in the Milk River Project, with 48 percent of normal inflow, and Bighorn Lake, with 56 percent of normal March inflow. Bighorn Lake had normal April 1, 1995 storage in spite of well-below average inflows in February (62%) and March (56%). Fresno storage, however, reflects the low inflow, with 76 percent of average April storage and only 57 percent of storage one year ago.

Neither the Sun River nor the Milk River basins received significant moisture from the late March-early April snowstorms which improved water-supply conditions throughout most of Montana. According to the Reservoir and River Operations Branch of USBR, water supply shortages could occur on the Sun River and Milk River Projects if spring and early summer rains are not at least average.

STATE PROJECTS

Tabes 4 summarizes April 1, 1995 storage in state-owned reservoirs. Storage in state-owned reservoirs ranges from a high of 141 percent of average at Cooney Reservoir in the Rock Creek drainage to only 46 percent of average at Painted Rocks Reservoir in the Upper Bitterroot drainage.

Petrolia and Painted Rocks reservoirs with 53 percent and 46 percent of average April 1 storage, respectively, are among state-owned reservoirs with below average storage. These low storage figures are misleading, however, as explained below.

Petrolia

The Petrolia Dam spillway is in a deteriorated condition and does not meet minimum spillway design criteria according to Montana Dam Safety Rules. Rehabilitation of Petrolia is anticipated to begin in the fall of 1995, and an interim operating permit may be issued if prompt rehabilitation is scheduled.

Petrolia will be managed conservatively and cautiously to preserve the spillway and outlet works until rehabilitation can be performed. Petrolia is currently being operated under enforced restrictions to assure that it does not fill beyond a structurally safe level.

Painted Rocks

Painted Rocks Reservoir storage appears to be quite low (46% of average) as of April 1, 1995. The low storage is due to instream flow requirements below the dam which are approximately equal to the winter inflow of the reservoir. Painted Rocks inflow in May and June will likely surpass the downstream flow requirements allowing the reservoir to fill easily. The low percent of average April 1 storage is misleading, and is due to the fact that the stream flow requirement below the dam has been adopted relatively recently in the Painted Rocks storage contents historical record.

Painted Rocks storage has nearly doubled in the past month, from 3,490 acre-feet (26% of average) on March 1, 1995, to 6,640 acre-feet (46% of average) on April 1, 1995.

Corps of Engineers (Upper Missouri)

According to the Army Corps of Engineers, storage on the Missouri River main stem on April 24, 1995 was 57,800,000 acre-feet, near average, but 2,900,000 acre-feet less than one year ago. The lake levels at Fork Peck, Garrison, and Oahe are 5.5, 5.4 and 1.2 feet lower, respectively, than one year ago.

Fort Peck

Storage in Fort Peck Reservoir on April 1, 1995 was 14,450,000 acre-feet, 100,000 acre-feet more than last month and 1,160,000 acre-feet less than one year ago. The lake level is expected to gain one foot during April, to approximately 5 feet lower than last year. Fort Peck releases will have increased from 4,000 to 6,000 cfs during April.

SOIL MOISTURE

The Montana Agricultural Statistics Service compiles estimates of topsoil and subsoil moisture supply. These estimates are based on a survey of various water users and other professionals regarding their opinions of soil moisture, and as such, can be regarded as qualitative measures. Soil moisture conditions are reported throughout the growing season (April through October), but the report is not produced throughout the winter months (November through March). Table 5 summarizes soil moisture conditions as of April 10, 1995. According to the survey, approximately 66% of respondents indicated adequate topsoil moisture while 25% reported short (or very short) topsoil conditions, and 8% reported surplus topsoil moisture. On the average 42% of the respondents reported short (or very short) subsoil moisture; 54% reported adequate subsoil moisture, and 4% reported surplus subsoil moisture conditions. Soil moisture deficits appear to be largest in Northcentral Montana and least in the southwest, southcentral and southeast parts of the state.

DROUGHT INDICES

Palmer Drought Severity Index

The Palmer Drought Severity Index (PDSI) is a drought indicator based on measured precipitation, estimated evapotranspiration and climatic characteristics. The PDSI is used to measure the effect of prolonged wet or dry periods on water sensitive economies and is best used as an indicator for prairie dryland farming and range areas. Table 5 summarizes PDSI by district in Montana for March 6 and April 6, 1995.

PDSI's throughout Montana vary greatly ranging from +2.6 in southwest Montana, indicating unusually moist conditions, to a -3.4 in northcental Montana, indicating sever drought conditions. Mild drought conditions are indicated for eastern Montana, while the Northwest and Southcentral regions appear to have near normal moisture conditions. Figure 1 illustrates PDSI's at individual National Weather Service recording stations throughout the State.

Surface Water Supply Index

The Natural Resource Conservation Service (NRCS) estimates a Surface Water Supply Index (SWSI) for individual Montana river basins based on snowpack, mountain precipitation, soil moisture and reservoir storage. The SWSI is best applied to mountainous areas with snowmelt-driven runoff and water storage reservoirs. As of April 1, 1995, Montana basins west of the continental divide had SWSI's ranging form -2.6 (moderately dry) on the Blackfoot River to +0.8 (near average) on the Kootenai River below Libby Dam.

East of the divide, low SWSI values were -2.6, -2.5, -2.3 and -2.2, indicating moderately dry conditions for the Teton, Milk, Sun, and Marias rivers, respectively in Northcentral, Montana. The highest SWSI value was +2.4, indicating moderately wet conditions, in the Madison River Basin and +1.2 (slightly wet) in the Missouri River Basin above Canyon Ferry.

Table 7 summarized the April 1, 1995 SWSI in Montana by river basin. Figure 2 illustrates SWSI values in various basins. The ranges which the SWSI can assume are described below.

Range	Description
+3.0 through +4.0	Extremely wet
+2.0 through +2.99	Moderately wet
+1.0 through +1.99	Slightly wet
-0.99 through +0.99	Near average
-1.99 through -1.0	Slightly dry
-2.99 through -2.0	Moderately dry
-4.0 through -3.0	Extremely dry

TABLE 1

Remaining Snowpack in Montana and Year-to-Date Precipitation[1]

Based on Mountain Data from NRCS SNOTEL Sites
As of Thursday, April 27, 1995

Basin	Snow Water Equivalent[2] (% of average)[3]	Year-to-Date[4] Precipitation (% of average)
Kootenai River	97	104
Flathead River	88	97
Upper Clark Fork River	85	94
Bitterroot River	80	97
Lower Clark Fork River	70	96
Jefferson River	124	115
Madison River	138	122
Gallatin River	119	104
Missouri River Headwaters	128	112
Headwaters Missouri Mainstem	109	93
Smith, Judith, & Musselshell Rivers	109	94
Sun, Teton, & Marias Rivers	75	89
Missouri Mainstem River Basin	92	92
St. Mary River	85	97
Upper Yellowstone	113	110
Bighorn River (Wyoming)	120	121
Tongue River (Wyoming)	94	112
Powder River (Wyoming)	108	121
Lower Yellowstone	113	116

Notes

(1) Information taken from Natural Resource Conservation Service Snow-Precipitation Update.

(2) The **Snow Water Equivalent** (% of average) represents the amount of water in the basin snowpack compared to the average value for the basin on this day.

(3) Reference period for average conditions is 1961-90.

(4) October 1, 1994 to present.

TABLE 2

MEAN MARCH 1995 MONTANA STREAMFLOW[1]

STREAM LOCATION	MARCH 1995 STREAMFLOW (cfs)	HISTORICAL AVERAGE MEAN MARCH FLOW	% of Historical Average
Beaverhead River near Twin Bridges	333	479	70
Big Hole River near Melrose	739	467	158
Jefferson River near Three Forks	1,660	1,550	107
Madison River below Hebgen Lake near Grayling	973	809	120
Madison River below Ennis Lake near McAllister	1,554	1,430	109
Gallatin River near Gallatin Gateway	348	309	113
Gallatin River at Logan	833	790	105
Smith River near Fort Logan	102	160	64
Sun River near Vaughn	244	330	74
Marias River near Shelby	1,090	580	188
Missouri River at Toston	4,200	4,110	102
Missouri River at Virgelle	6,377	7,300	87
Missouri River near Culbertson	11,500	10,600	108
Milk River at Nashua	147	1,140	1
Musselshell River near Roundup	66	214	31
Yellowstone River at Corwin Springs	939	908	103
Yellowstone River at Billings	2,660	3,050	87
Yellowstone River near Sidney	7,940	11,100	72
Bitterroot River near Darby	381	349	109
Blackfoot River near Bonner	947	766	124
Clark Fork above Missoula	1,600	1,860	86
Clark Fork below Missoula	---[2]	3,070	---
Middle Fork of Flathead near West Glacier	2,020	817	247
Clark Fork at St. Regis	5,160	4,260	121

Notes

(1) Discharges are provided by the USGS and are provisional (subject to revision). Provisional data are not citable.

(2) Streamflow data unavailable (---).

TABLE 2-A MEAN APRIL 12, 1995 MONTANA STREAMFLOW[1]			
STREAM LOCATION	*APRIL 12, 1995 [2] STREAMFLOW (cfs)*	*HISTORICAL AVERAGE MEAN APRIL 12 FLOW [3]*	*% of Historical Average*
Big Hole River near Melrose	886	1,310	68
Jefferson River near Three Forks	1,910	2,010	95
Madison River below Ennis Lake near McAllister	2,040	1,550	132
Gallatin River near Gallatin Gateway	457	404	113
Smith River near Fort Logan	150	172	87
Marias River near Chester	474	790	60
Missouri River at Toston	5,710	5,220	109
Missouri River at Virgelle	6,870	8,160	84
Yellowstone River at Corwin Springs	1,180	1,210	98
Yellowstone River at Billings	3,310	3,570	93
Bitterroot River near Darby	530	724	73
Blackfoot River near Bonner	1,390	1,740	80
Kootenai River below Libby Dam	4,020	4,870	83
Middle Fork of Flathead near West Glacier	2,010	2,300	87
Flathead River at Columbia Falls	4,890	9,480	52
Clark Fork near Drummond	582	565	103
Clark Fork at St. Regis	5,900	7,830	75

Notes

(1) Discharges are provided by the USGS and are provisional (subject to revision). Provisional data are not citable.

(2) Instantaneous flow prior to 11:00 am April 12, 1995.

(3) Mean daily flow based on historical recorded April 12 flow through 1993.

TABLE 3[1]					
Status of U.S. Bureau of Reclamation Reservoirs					
Reservoir	Drainage	4/1/95		Year Ago (4/1/94)	
		Content[2] (ac-ft)	% of Avg.	Content[2] (ac-ft)	% of Avg.
Clark Canyon	Beaverhead	143,100	93	170,100	111
Canyon Ferry	Missouri	1,488,000	100	1,469,000	99
Gibson	Sun River	26,630	53	56,240	111
Lake Elwell	Marias River	733,500	123	765,000	128
Sherburne	St. Mary River[3]	25,440	104	36,570	150
Fresno	Milk River	58,840	76	103,300	134
Nelson	Milk River	21,750	60	49,840	136
Bighorn Lake	Bighorn River	798,000	100	783,300	98
Hungry Horse	South Fork Flathead River	1,863,000	91	811,800	40

Notes

(1) Information from U.S. Bureau of Reclamation (USBR).

(2) "Content" refers to active contents only (dead storage not included).

(3) Interbasin diversion from St. Mary River to North Fork Milk River.

TABLE 4

Status of State-Owned Reservoirs[1]
April 1, 1995

Reservoir	Drainage	April 1, 1995 Storage (ac-ft)	April 1, 1995 % of Avg.	April 1, 1995 % of Capacity	Year Ago (4/1/9 Storage (ac-ft)	Year Ago (4/1/9 % of Average
Missouri River Basin						
Bair	Musselshell	4,060	86	58	5,640	120
Deadman's Basin	Musselshell	60,200	120	83	59,700	119
Martinsdale	Musselshell	6,290	65	27	16,670	171
Middle Creek (Hyalite)	Gallatin River	5,590	135	55	3,970	96
North Fork of Smith	Smith River	5,980	81	52	10,260	138
Petrolia	Musselshell	3,900	53	44	8,540	117
Ruby River	Ruby River	30,070	96	77	36,380	117
Yellowstone River Basin						
Cooney	Rock Creek	23,790	141	84	20,900	124
Tongue River	Tongue River	33,080	92	49	30,220	84
Clark Fork River Basin						
East Fork of Rock Creek	Rock Creek	8,020[3]	74	50	13,030[3]	121
Nevada Creek	Blackfoot River	6,950	95	55	8,920	122
Painted Rocks	Bitterroot River	6,640	46	21	3,310	23

Notes

(1) Information from Montana Department of Natural Resources and Conservation, State Water Projects Bureau.

(2) Reservoir storage data is unavailable (-----).

(3) Estimated reservoir storage.

TABLE 5

Soil Moisture Conditions in Montana[1]
April 10, 1995

Topsoil Moisture Conditions

District	Percentage of Districts Reporting			
	Very Short	Short	Adequate	Surplus
Northwest	13.0	34.7	49.4	2.9
Northcentral	14.2	57.4	23.1	5.4
Northeast	2.0	18.4	78.8	0.8
Central	6.7	12.5	74.3	6.5
Southwest	0.0	0.0	96.9	3.1
Southcentral	0.0	0.0	100.0	0.0
Southeast	0.8	11.2	61.9	26.1
Wtd. Average	5.1	20.4	66.1	8.4

Subsoil Moisture Conditions
April 10, 1995

District	Percentage of Districts Reporting			
	Very Short	Short	Adequate	Surplus
Northwest	27.0	29.9	40.2	2.9
Northcentral	23.9	43.4	26.0	6.7
Northeast	2.3	18.8	78.2	0.7
Central	15.2	39.2	45.6	0.0
Southwest	0.0	13.1	83.8	3.1
Southcentral	0.0	33.6	66.4	0.0
Southeast	1.3	42.7	45.5	10.5
Wtd. Average	9.6	32.3	53.9	4.2

(1) Data furnished by the Montana Agricultural Statistics Service.

TABLE 6				
Palmer Drought Severity Indices (PDSI) in Montana[1]				
District	PDSI 3/6/95	PDSI 4/6/95	Precipitation to End Drought (inches)	
			3/6/95	4/6/95
Northwest	+0.2	0	0	0
Southwest	+2.5	+2.6	0	0
Northcentral	-3.3	-3.4	2.3	2.5
Central	-2.8	-2.7	2.3	2.2
Southcentral	+0.2	+0.3	0	0
Northeast	-0.6	-1.4	0.3	0.8
Southeast	-0.4	-1.4	0	0.7

Explanation: The Palmer Drought Severity Index describes the intensity of prolonged wet or dry periods as shown below.

Range	Description
+4.0 and greater	Extremely moist spell
+3.0 through +3.99	Very moist spell
+2.0 through +2.99	Unusually moist spell
+1.0 through +1.99	Moist spell
+0.5 through +0.99	Incipient moist spell
-0.49 through +0.49	Normal
-0.5 through -0.99	Incipient Drought
-1.0 through -1.99	Mild drought
-2.0 through -2.99	Moderate drought
-3.0 through -3.99	Severe drought
-4.0 and less	Extreme drought

Notes

(1) Palmer Drought Severity Indices provided by Climate Analysis Center, Washington, D.C.

TABLE 7

Montana Surface Water Supply Indices (SWSIs)
April 1, 1995

Basin	SWSI	Basin	SWSI
Tobacco River	-0.3	Gallatin River	+0.8
Kootenai River below Libby Dam	+0.8	Missouri River above Canyon Ferry	+1.2
Fisher River	-1.3	Missouri River below Canyon Ferry	+0.9
Yaak River	-1.5	Smith River	-1.8
North Fork Flathead River	-0.9	Sun River	-2.3
Middle Fork Flathead River	-2.1	Teton River	-2.6
South Fork Flathead River	-1.5	Birch/Dupuyer Creeks	-2.1
Flathead River at Columbia Falls	-1.5	Marias River	-2.2
Stillwater/Whitefish Rivers	-1.0	Musselshell River	-0.2
Swan River	-1.4	Missouri above Fort Peck	+0.5
Flathead River at Polson	-1.4	Missouri River below Fort Peck	0.0
Mission Valley	-1.4	Milk River	-2.5
Little Bitterroot River	-2.5	Yellowstone River above Livingston	+0.1
Blackfoot River	-2.6	Shields River	+0.2
Clark Fork River above Missoula	-2.0	Boulder River (Yellowstone)	-0.6
Bitterroot River	-2.0	Stillwater River	-0.4
Clark Fork River below Bitterroot River	-2.0	Rock/Red Lodge Creeks	-0.5
Clark Fork River below Flathead River	-1.8	Clarks Fork River	-0.4
Beaverhead River	+1.0	Yellowstone above Bighorn River	-0.1
Ruby River	+1.0	Bighorn River	+0.1
Big Hole River	+0.2	Little Bighorn River	-1.3
Boulder River (Jefferson)	+0.1	Yellowstone River below Bighorn River	0.0
Jefferson River	+0.5	Tongue River	-1.3
Madison River	+2.4	Powder River	-0.1

Explanation: The Surface Water Supply Index (SWSI) is an indicator describing predicted surface water availability during spring and summer months. The April 1, 1995 SWSI describes surface water supply conditions near the beginning of the 1995 growing season. SWSI values are further illustrated in Figure 2.

TABLE 1

Remaining Snowpack in Montana and Year-to-Date Precipitation[1]

Based on Mountain Data from NRCS SNOTEL Sites
As of Thursday, April 27, 1995

Basin	Snow Water Equivalent[2] (% of average)[3]	Year-to-Date[4] Precipitation (% of average)
Kootenai River	97	104
Flathead River	88	97
Upper Clark Fork River	85	94
Bitterroot River	80	97
Lower Clark Fork River	70	96
Jefferson River	124	115
Madison River	138	122
Gallatin River	119	104
Missouri River Headwaters	128	112
Headwaters Missouri Mainstem	109	93
Smith, Judith, & Musselshell Rivers	109	94
Sun, Teton, & Marias Rivers	75	89
Missouri Mainstem River Basin	92	92
St. Mary River	85	97
Upper Yellowstone	113	110
Bighorn River (Wyoming)	120	121
Tongue River (Wyoming)	94	112
Powder River (Wyoming)	108	121
Lower Yellowstone	113	116

Notes

(1) Information taken from Natural Resource Conservation Service Snow-Precipitation Update.

(2) The **Snow Water Equivalent** (% of average) represents the amount of water in the basin snowpack compared to the average value for the basin on this day.

(3) Reference period for average conditions is 1961-90.

(4) October 1, 1994 to present.

TABLE 2			
MEAN MARCH 1995 MONTANA STREAMFLOW[1]			
STREAM LOCATION	*MARCH 1995 STREAMFLOW (cfs)*	*HISTORICAL AVERAGE MEAN MARCH FLOW*	*% of Historical Average*
Beaverhead River near Twin Bridges	333	479	70
Big Hole River near Melrose	739	467	158
Jefferson River near Three Forks	1,660	1,550	107
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Madison River below Ennis Lake near McAllister	1,554	1,430	109
Gallatin River near Gallatin Gateway	348	309	113
Gallatin River at Logan	833	790	105
Smith River near Fort Logan	102	160	64
Sun River near Vaughn	244	330	74
Marias River near Shelby	1,090	580	188
Missouri River at Toston	4,200	4,110	102
Missouri River at Virgelle	6,377	7,300	87
Missouri River near Culbertson	11,500	10,600	108
Milk River at Nashua	147	1,140	[illegible]
Musselshell River near Roundup	66	214	31
Yellowstone River at Corwin Springs	939	908	103
Yellowstone River at Billings	2,660	3,050	87
Yellowstone River near Sidney	7,940	11,100	72
Bitterroot River near Darby	381	349	109
Blackfoot River near Bonner	947	766	124
Clark Fork above Missoula	1,600	1,860	86
Clark Fork below Missoula	---[2]	3,070	---
Middle Fork of Flathead near West Glacier	2,020	817	247
Clark Fork at St. Regis	5,160	4,260	121

Notes

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(2) Streamflow data unavailable (---).

TABLE 2-A			
MEAN APRIL 12, 1995 MONTANA STREAMFLOW[1]			
STREAM LOCATION	*APRIL 12, 1995 [2] STREAMFLOW (cfs)*	*HISTORICAL AVERAGE MEAN APRIL 12 FLOW [3]*	*% of Historical Average*
Big Hole River near Melrose	886	1,310	68
Jefferson River near Three Forks	1,910	2,010	95
Madison River below Ennis Lake near McAllister	2,040	1,550	132
Gallatin River near Gallatin Gateway	457	404	113
Smith River near Fort Logan	150	172	87
Marias River near Chester	474	790	60
Missouri River at Toston	5,710	5,220	109
Missouri River at Virgelle	6,870	8,160	84
Yellowstone River at Corwin Springs	1,180	1,210	98
Yellowstone River at Billings	3,310	3,570	93
Bitterroot River near Darby	530	724	73
Blackfoot River near Bonner	1,390	1,740	80
Kootenai River below Libby Dam	4,020	4,870	83
Middle Fork of Flathead near West Glacier	2,010	2,300	87
Flathead River at Columbia Falls	4,890	9,480	52
Clark Fork near Drummond	582	565	103
Clark Fork at St. Regis	5,900	7,830	75

Notes

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(2) Instantaneous flow prior to 11:00 am April 12, 1995.

(3) Mean daily flow based on historical recorded April 12 flow through 1993.

TABLE 3[1]					
Status of U.S. Bureau of Reclamation Reservoirs					
Reservoir	Drainage	4/1/95		Year Ago (4/1/94)	
		Content[2] (ac-ft)	% of Avg.	Content[2] (ac-ft)	% of Avg.
Clark Canyon	Beaverhead	143,100	93	170,100	111
Canyon Ferry	Missouri	1,488,000	100	1,469,000	99
Gibson	Sun River	26,630	53	56,240	111
Lake Elwell	Marias River	733,500	123	765,000	128
Sherburne	St. Mary River[3]	25,440	104	36,570	150
Fresno	Milk River	58,840	76	103,300	134
Nelson	Milk River	21,750	60	49,840	136
Bighorn Lake	Bighorn River	798,000	100	783,300	98
Hungry Horse	South Fork Flathead River	1,863,000	91	811,800	40

Notes

(1) Information from U.S. Bureau of Reclamation (USBR).

(2) "Content" refers to active contents only (dead storage not included).

(3) Interbasin diversion from St. Mary River to North Fork Milk River.

TABLE 4

Status of State-Owned Reservoirs[1]
April 1, 1995

Reservoir	Drainage	April 1, 1995 Storage (ac-ft)	April 1, 1995 % of Avg.	April 1, 1995 % of Capacity	Year Ago (4/1/9 Storage (ac-ft)	Year Ago (4/1/9 % of Average
Missouri River Basin						
Bair	Musselshell	4,060	86	58	5,640	120
Deadman's Basin	Musselshell	60,200	120	83	59,700	119
Martinsdale	Musselshell	6,290	65	27	16,670	171
Middle Creek (Hyalite)	Gallatin River	5,590	135	55	3,970	96
North Fork of Smith	Smith River	5,980	81	52	10,260	138
Petrolia	Musselshell	3,900	53	44	8,540	117
Ruby River	Ruby River	30,070	96	77	36,380	117
Yellowstone River Basin						
Cooney						
Tongue River	Rock Creek	23,790	141	84	20,900	124
	Tongue River	33,080	92	49	30,220	84
Clark Fork River Basin						
East Fork of Rock Creek						
Nevada Creek	Rock Creek	8,020[3]	74	50	13,030[3]	121
Painted Rocks	Blackfoot River	6,950	95	55	8,920	122
	Bitterroot River	6,640	46	21	3,310	23

Notes

(1) Information from Montana Department of Natural Resources and Conservation, State Water Projects Bureau.

(2) Reservoir storage data is unavailable (-----).

(3) Estimated reservoir storage.

TABLE 5

Soil Moisture Conditions in Montana[1] April 10, 1995

Topsoil Moisture Conditions

District	Percentage of Districts Reporting			
	Very Short	Short	Adequate	Surplus
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Northcentral	14.2	57.4	23.1	5.4
Northeast	2.0	18.4	78.8	0.8
Central	6.7	12.5	74.3	6.5
Southwest	0.0	0.0	96.9	3.1
Southcentral	0.0	0.0	100.0	0.0
Southeast	0.8	11.2	61.9	26.1
Wtd. Average	5.1	20.4	66.1	8.4

Subsoil Moisture Conditions April 10, 1995

District	Percentage of Districts Reporting			
	Very Short	Short	Adequate	Surplus
Northwest	27.0	29.9	40.2	2.9
Northcentral	23.9	43.4	26.0	6.7
Northeast	2.3	18.8	78.2	0.7
Central	15.2	39.2	45.6	0.0
Southwest	0.0	13.1	83.8	3.1
Southcentral	0.0	33.6	66.4	0.0
Southeast	1.3	42.7	45.5	10.5
Wtd. Average	9.6	32.3	53.9	4.2

(1) Data furnished by the Montana Agricultural Statistics Service.

TABLE 6				
Palmer Drought Severity Indices (PDSI) in Montana[1]				
District	PDSI 3/6/95	PDSI 4/6/95	Precipitation to End Drought (inches)	
			3/6/95	4/6/95
Northwest	+0.2	0	0	0
Southwest	+2.5	+2.6	0	0
Northcentral	-3.3	-3.4	2.3	2.5
Central	-2.8	-2.7	2.3	2.2
Southcentral	+0.2	+0.3	0	0
Northeast	-0.6	-1.4	0.3	0.8
Southeast	-0.4	-1.4	0	0.7

Explanation: The Palmer Drought Severity Index describes the intensity of prolonged wet or dry periods as shown below.

Range	Description
+4.0 and greater	Extremely moist spell
+3.0 through +3.99	Very moist spell
+2.0 through +2.99	Unusually moist spell
+1.0 through +1.99	Moist spell
+0.5 through +0.99	Incipient moist spell
-0.49 through +0.49	Normal
-0.5 through -0.99	Incipient Drought
-1.0 through -1.99	Mild drought
-2.0 through -2.99	Moderate drought
-3.0 through -3.99	Severe drought
-4.0 and less	Extreme drought

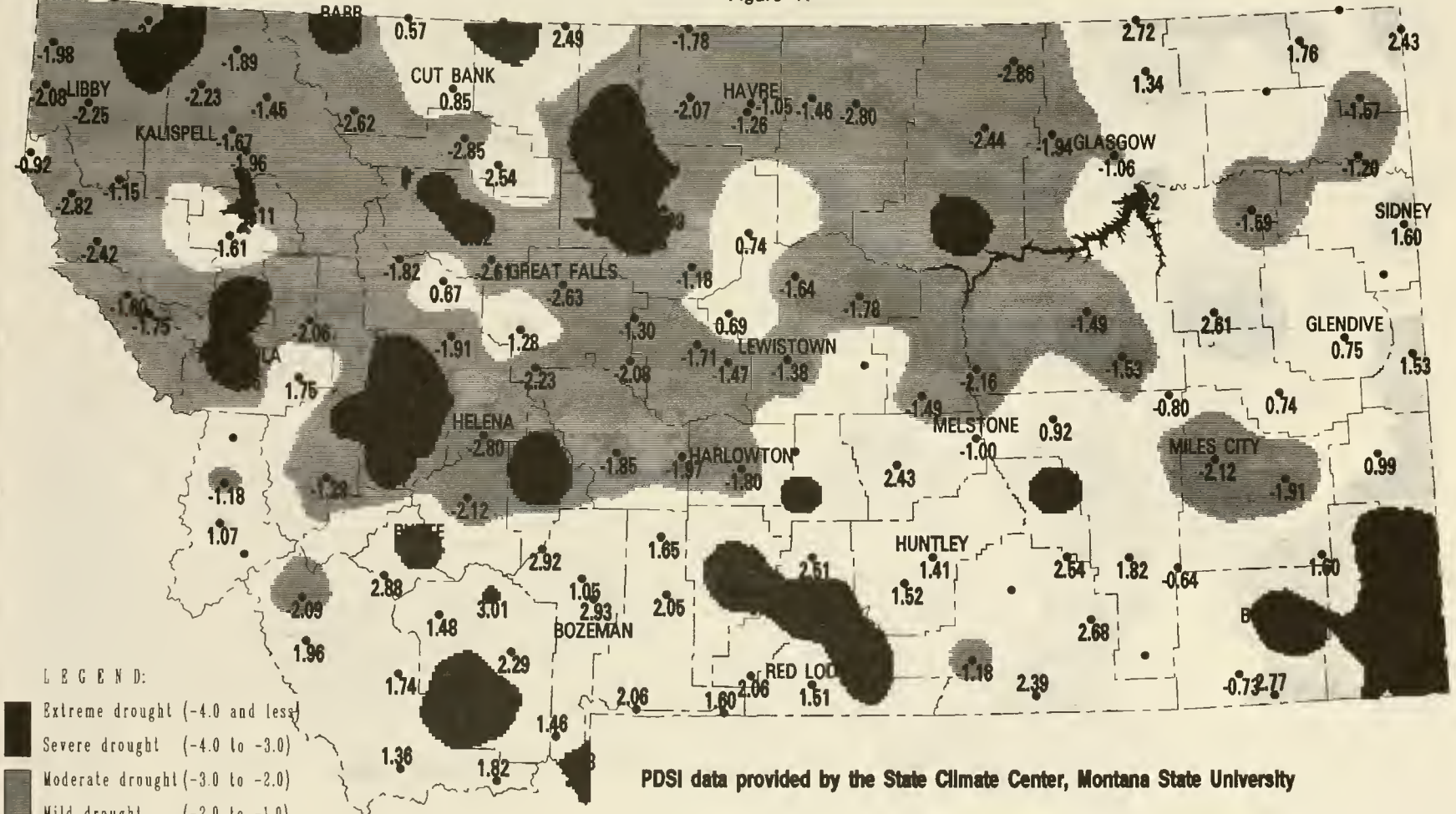
Notes

(1) Palmer Drought Severity Indices provided by Climate Analysis Center, Washington, D.C.

TABLE 7			
Montana Surface Water Supply Indices (SWSIs) April 1, 1995			
Basin	SWSI	Basin	SWSI
Tobacco River	-0.3	Gallatin River	+0.8
Kootenai River below Libby Dam	+0.8	Missouri River above Canyon Ferry	+1.2
Fisher River	-1.3	Missouri River below Canyon Ferry	+0.9
Yaak River	-1.5	Smith River	-1.8
North Fork Flathead River	-0.9	Sun River	-2.3
Middle Fork Flathead River	-2.1	Teton River	-2.6
South Fork Flathead River	-1.5	Birch/Dupuyer Creeks	-2.1
Flathead River at Columbia Falls	-1.5	Marias River	-2.2
Stillwater/Whitefish Rivers	-1.0	Musselshell River	-0.2
Swan River	-1.4	Missouri above Fort Peck	+0.5
Flathead River at Polson	-1.4	Missouri River below Fort Peck	0.0
Mission Valley	-1.4	Milk River	-2.5
Little Bitterroot River	-2.5	Yellowstone River above Livingston	+0.1
Blackfoot River	-2.6	Shields River	+0.2
Clark Fork River above Missoula	-2.0	Boulder River (Yellowstone)	-0.6
Bitterroot River	-2.0	Stillwater River	-0.4
Clark Fork River below Bitterroot River	-2.0	Rock/Red Lodge Creeks	-0.5
Clark Fork River below Flathead River	-1.8	Clarks Fork River	-0.4
Beaverhead River	+1.0	Yellowstone above Bighorn River	-0.1
Ruby River	+1.0	Bighorn River	+0.1
Big Hole River	+0.2	Little Bighorn River	-1.3
Boulder River (Jefferson)	+0.1	Yellowstone River below Bighorn River	0.0
Jefferson River	+0.5	Tongue River	-1.3
Madison River	+2.4	Powder River	-0.1

Explanation: The Surface Water Supply Index (SWSI) is an indicator describing predicted surface water availability during spring and summer months. The April 1, 1995 SWSI describes surface water supply conditions near the beginning of the 1995 growing season. SWSI values are further illustrated in Figure 2.

Figure 1.



PDSI data provided by the State Climate Center, Montana State University

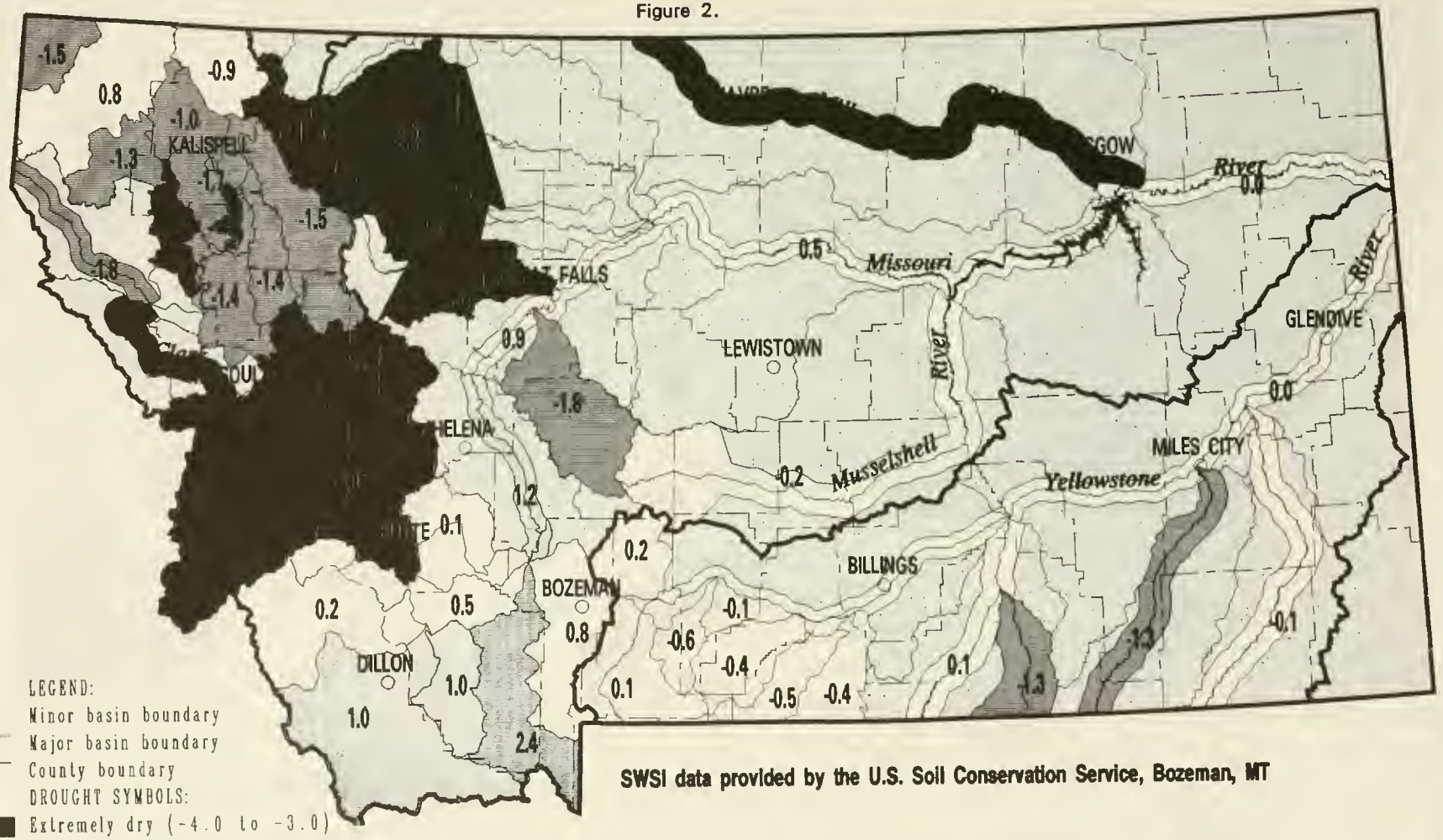
Palmer Drought Severity Index (PDSI) Values:

April 1, 1995

NOTE: PDSI values primarily indicate moisture conditions on non-irrigated prairie lands. The values shown may be based on provisional data and subject to change. Points on the map without a PDSI value are in the normal range (-0.5 to 0.5).

Natural Resource Information System
NRIS
Montana State Library

Figure 2.



SWSI data provided by the U.S. Soil Conservation Service, Bozeman, MT

Surface Water Supply Index (SWSI) Values:
April 1, 1995

NOTE: SWSI values primarily indicate water supply conditions for irrigated lands within each basin. The values shown may be based on provisional data and subject to change.

Natural Resource Information System
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TEMPERATURE AND PRECIPITATION
For Week Ending 5:00 p.m., MDT, April 22, 1995

STATIONS	TEMPERATURE PAST WEEK			PRECIPITATION			
				Past Week	Accumulated April 1 to Date		
	High	Low	Average		1995	Normal 1/	% Normal
	-- Degrees --			------ Inches ------			-- Pct. --
NORTHWEST							
DRUMMOND	58	14	36	0.33	0.77	0.78	99
HAMILTON	58	20	39	0.21	0.62	0.70	89
KALISPELL	58	23	40	0.33	1.15	0.81	142
MISSOULA	62	21	42	0.14	0.72	0.70	103
THMPSN FALLS	62	24	43	0.12	0.76	1.10	69
POLSON	58	25	42	0.24	0.97	0.80	121
LIBBY	60	25	42	0.16	1.11	0.78	142
SOUTHWEST							
HELENA	60	20	40	0.36	1.01	0.71	142
BELGRADE	58	25	42	0.16	2.17	0.89	244
BUTTE	58	17	38	0.23	0.81	0.67	121
WISDOM	52	10	31	0.04	0.40	0.63	63
DILLON	54	15	34	0.42	1.53	0.84	182
W YELLOWSTONE	49	14	32	0.03	1.23	1.12	110
BOZEMAN	59	25	42	0.03	1.78	1.37	130
LIMA	47	10	28	0.16	0.58	0.77	75
NORTH CENTRAL							
CUT BANK	55	18	36	0.10	0.33	0.60	55
HAVRE	60	25	42	0.08	0.55	0.69	80
CONRAD	60	15	38	0.00	0.70	0.70	100
CHESTER	60	19	40	0.00	0.45	0.57	79
FT BENTON	63	27	45	0.00	0.95	0.89	107
HARLEM	62	25	44	0.07	0.52	0.64	81
MALTA	61	23	42	0.07	0.75	0.69	109
CENTRAL							
GREAT FALLS	59	23	41	0.04	1.77	1.03	172
LEWISTOWN	52	26	39	0.11	1.45	0.89	163
AUGUSTA	56	17	36	0.02	1.09	0.79	138
HARLOWTON	56	21	38	0.12	0.70	0.70	100
STANFORD	55	20	38	0.03	2.29	0.97	236
ROUNDUP	56	26	41	0.26	1.72	0.76	226
SOUTH CENTRAL							
BILLINGS	58	29	44	0.12	0.97	1.28	76
HARDIN	60	24	42	0.02	1.07	1.02	105
LIVINGSTON	55	23	39	0.26	0.88	1.06	83
BIG TIMBER	52	25	38	0.50	1.16	1.03	113
RED LODGE	50	20	35	0.68	1.75	2.49	70
WYOLA	57	20	38	0.28	0.92	1.50	61
NORTHEAST							
GLASGOW	59	27	43	0.06	1.40	0.51	275
GLENDIVE	64	29	46	0.02	1.16	0.87	133
JORDAN	61	21	41	0.14	0.63	0.86	73
MEDICINE LAKE	61	27	44	0.13	0.55	0.84	65
VIDA	61	23	42	0.18	0.68	0.79	86
SIDNEY	63	26	44	0.07	0.67	0.87	77
SOUTHEAST							
BROADUS	57	27	42	0.07	1.32	1.09	121
MILES CITY	60	27	44	0.03	0.77	1.00	77
EKALAKA	56	23	40	0.16	1.17	1.22	96
INGOMAR	62	24	43	0.04	0.48	0.68	71
BAKER	61	24	42	0.03	0.03	1.11	3

1/ For period 1961-1990.

Peggy Stringer
State Statistician

Kenneth Mielke, Meteorologist-in-Charge
National Weather Service--453-2081
Dr. Andrea Pagenkopf, Associate Vice President for Outreach and Extension

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SUMMARY OF MOUNTAIN PRECIPITATION
AS OF 4/27/95
DATA SOURCE: NRCS SNOTEL SITES

River Basins West of the Continental Divide

Basin	Snow Water Equivalent % of Avg.;% chnge from 4/20/95	Total Precipitation % of Avg.% chnge from 4/20/95
Kootenai	97 (-1%)	104 (-1%)
Flathead	88 (+2)	97 (-1)
Upper Clark Fork	85 (+6)	94 (+2)
Bitterroot	80 (+4)	97 (nc)
Lower Clark Fork	70 (-2)	96 (-2)

River Basins East of the Continental Divide

Jefferson	124 (+11)	115 (+1)
Madison	138 (+6)	122 (+13)
Gallatin	119 (+8)	104 (+4)
Missouri Headwaters	128 (+11)	112 (+2)
Miss. Hdwtr. Mainstem	109 (+10)	93 (+1)
Smith, Judith, Mssishl.	109 (+11)	94 (-1)
Sun, Teton, Marias	75 (+7)	89 (+1)
Missouri Mainstem	92 (+9)	92 (+1)
St. Mary	85 (+6)	97 (-1)
Upper Yellowstone	113 (+8)	110 (+2)
Lower Yellowstone	113 (+13)	116 (+2)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY, WATER RESOURCES DIVISION
Helena, Montana

Preliminary storage in reservoirs, in acre-feet, in SASKATCHEWAN, MISSOURI, and COLUMBIA RIVER BASINS in Montana on last day of March 1995. The final data will be published in the yearly publication WATER RESOURCES DATA, MONTANA

	Reservoir	Located on or diverting from	Usable capacity	Average	Contents		
					This month	Last month	Year ago
c	Lake Sherburne	Swiftcurrent Cr	64,790	24,440	25,440	20,990	36,570
c	Lima Reservoir	Red Rock River	84,050	36,920	30,010	12,710	53,770
c	Clark Canyon Res	Beaverhead River	255,600	25/ 153,560	143,100	129,400	170,100
h	Ruby River Res	Ruby River	38,850	29/ 31,220	**30,100	23,280	36,380
f	Hebgen Lake	Madison River	378,800	246,580	247,700	259,200	259,900
f	Ennis Lake	Madison River	41,020	33,190	30,660	30,650	28,320
h	Middle Creek Res	Hyalite Creek	10,190	4,130	**5,590	--	3,970
c	Canyon Ferry Lake	Missouri River	2,043,000	1,489,000	1,488,000	1,563,000	1,469,000
c	Helena Valley Res	Missouri River	9,190	27/ 3,970	4,040	4,060	6,650
f	Hauser L + L Helena	Missouri River	67,830	60,980	63,070	63,060	63,060
f	Lake Helena	Prickly Pear Cr	12,710	10,170	10,910	10,900	10,910
f	Holter Lake	Missouri River	81,920	67,170	81,020	79,110	80,490
h	Smith River Res	Smith River	10,650	7,410	5,980	5,320	10,180
c	Gibson Reservoir	Sun River	99,060	50,500	26,630	28,070	56,240
c	Pishkun Reservoir	Sun River	32,050	17,750	15,040	0	18,910
c	Willow Creek Res	Sun R & Willow C	32,230	22,800	19,820	19,060	31,510
b	Lower Two Medicine	Two Medicine R	13,500	14/ 9,600	11,730	10,260	11,810
b	Four Horns	Badger Creek	19,250	27/ 12,750	11,310	11,310	13,030
e	Swift Reservoir	Birch Creek	29,980	23/ 17,200	18,170	15,520	22,620
e	Lake Frances	Birch-Dupuyer Cr	111,900	71,610	52,220	50,450	96,900
c	Lake Elwell	Marias River	1,347,000	596,660	733,500	725,600	765,000
h	Bair Reservoir	NF Musselshell R	7,010	4,700	4,060	3,790	5,570
h	Martinsdale Res	SF Musselshell R	23,110	9,740	*6,290	5,170	16,640
h	Deadman's Basin Res	Musselshell R	72,220	29/ 50,070	*60,200	55,360	59,700
d	Fort Peck Lake	Missouri River	18,910,000	14,860,000	14,450,000	14,350,000	15,610,000
c	Fresno Reservoir	Milk River	103,000	77,080	58,840	50,860	103,300
c	Nelson Reservoir	Milk River	66,800	36,520	21,750	20,140	49,840
f	Mystic Lake	West Rosebud Cr	21,000	3,110	1,770	3,130	1,270
h	Cooney Reservoir	Red Lodge Creek	27,400	16,900	**23,790	22,000	20,900
c	Bighorn Lake	Bighorn River	1,356,000	24/ 798,500	798,000	796,600	783,300
h	Tongue River Res	Tongue River	68,040	36,090	33,080	29,420	30,220
d	Lake Koocanusa	Kootenai River	5,748,000	18/ 2,141,000	2,835,000	2,806,000	2,364,000
f	Georgetown Lake	Flint Creek	31,040	24,780	27,920	27,920	27,320
h	East Fork Rock C Res	East Fork Rock C	16,040	7/ 10,780	*8,020	--	13,030
h	Nevada Lake	Nevada Creek	12,640	29/ 7,290	**6,950	5,750	8,920
h	Painted Rocks	WF Bitterroot R	31,700	27/ 14,560	*6,640	3,490	3,230
i	Como	Rock Creek	34,920	15,480	21,200	16,150	9,120
c	Hungry Horse Res	SF Flathead R	3,451,000	2,046,000	1,863,000	1,721,000	811,800
	Flathead Lake	Flathead River	1,791,000	751,900	656,400	749,200	623,200
b	CAMAS RESERVOIRS (total of 4):		45,190	23,690	14,760	11,470	21,420
	L Bitterroot Lk	L Bitterroot R	26,400	13,380	6,440	5,800	8,150
	Hubbart Reservoir	L Bitterroot R	12,120	6,420	4,700	2,870	9,410
	Upper Dry Fork Res	Dry Fork Creek	2,810	1,390	1,060	1,030	1,760
	Dry Fork Reservoir	Dry Fork Creek	3860	2,500	2,600	1,770	2,100
b	MISSION VALLEY RES (total of 8):		102,600	40,890	29,520	29,640	36,550
	Turtle Lake	Fed by canals	899	320	130	100	0
	Lower Crow Res	Crow Creek	10,350	8,320	9,100	8,790	8,260
	Mission Reservoir	Mission Creek	8,130	1,680	1,170	1,280	2,240
	St. Marys Lake	Dry Creek	23,500	3,220	496	0	2,050
	Pablo Reservoir	Fed by canals	28,400	9,480	13,200	13,230	8,340
	McDonald Reservoir	Post Creek	7,120	4,170	0	0	300
	Kicking Horse Res	Fed by canals	9,200	4,470	2,940	2,770	4,820
	Ninepipe Reservoir	Fed by canals	15,000	9,240	2,490	3,470	10,540
b	Upper Jocko Lake	Fed by canals	5,200	4/ 0	0	0	0
b	Lower Jocko Lake	Jocko River	6,380	24/ 30	0	0	0
g	Noxon Rapids Res	Clark Fork	334,600	231,300	301,000	321,200	264,000

Data furnished by:
b Bureau of Indian Affairs
c Bureau of Reclamation
d Corps of Engineers, U.S. Army
e Pondera County Canal & Reser. Co.,
f The Montana Power Co
g Washington Water Power Co
h Water Resources Div., Mont. Dept. of Nat. Resources & Conservation
i Bitterroot Irrigation

* First day of the following month
**Within week of monthend
E Estimated
† Restricted capacity
/ Indicates number of years used to calculate average, otherwise 1961-90 average used
--No data

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